

# M ARTISAN

## IN THIS ISSUE

• **HOW TO** estimate cooling load for residential air conditioning — including some short cuts — is discussed this month. Page 38.

• **"PREVIEW"** of next month's National Warm Air Heating and Air Conditioning Association convention describes program designed to help contractors solve their common problems. Page 43.

• **TESTS TO** determine the thermal behavior of stainless steel curtain wall panels prove they more than meet construction requirements. Page 59.

### Cover Picture

• **"L" SHAPED** extended plenum provides easy takeoff for small pipe warm air heating system. Contractors' questions on velocity and temperature are answered. Page 64.



# WHY



## PERIMETER DIFFUSERS

*give unequalled performance*

When you install Air Control Perimeter Diffusers you know you are using the most effective so far perfected and diffusers that will distribute the air *correctly* for any perimeter installation. Write for Bulletin 83-AC for complete details and low prices on the Air Control Perimeter Diffuser line.

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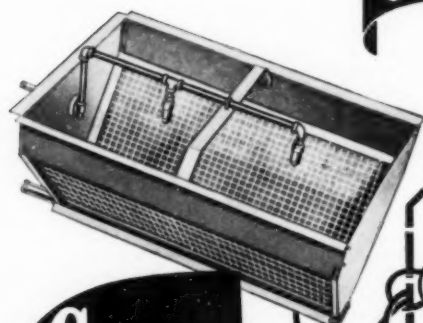
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**...PIONEERS IN AUTOMATIC HEATING FOR OVER 26 YEARS**

# AMERICAN ARTISAN

NOVEMBER 1952

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Founded 1864

Volume 89, No. 11

## RESIDENTIAL AIR CONDITIONING WARM AIR HEATING

## SHEET METAL CONTRACTING

Merged with American Artisan are "Warm Air Heating" and "Furnaces and Sheet Metals"

### EDITOR

CLYDE M. BARNES

### ASSOCIATE EDITOR

A. H. BURNS

### EDITORIAL ASSISTANT

H. C. LENNARTSON

### ADVERTISING STAFF

WALLACE J. OSBORN

ROBERT J. OSBORN

New York City

Murray Hill 9-8293

ROBERT A. JACK

DAVID V. MAHAN

Cleveland

EVERGREEN-2-1840

JAMES D. THOMAS

GEORGE C. CUTLER

JAMES E. SACRA

Chicago

STate 2-6916

R. PAYNE WETSTEIN

Los Angeles—DUckirk 8-2286

San Francisco—YUkon 6-2522

Portland—ATwater 4107

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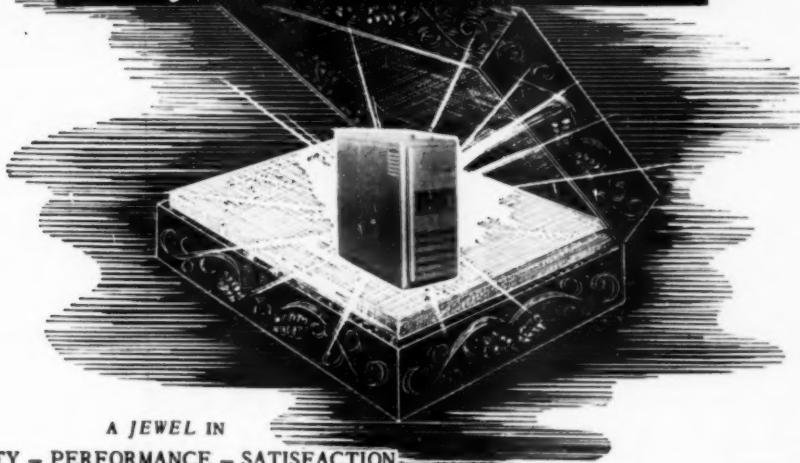


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WHAT *your* CUSTOMER WILL THINK OF—

# Syncromatic



A JEWEL IN  
QUALITY — PERFORMANCE — SATISFACTION

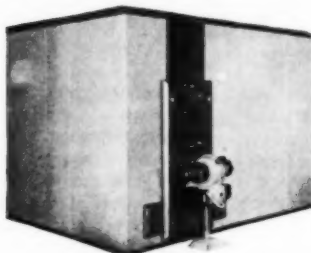
A treasure you will appreciate in — MECHANICAL PERFECTION — CAREFREE  
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This translated to trade language means — A honey to sell — A good profit item — No  
costly service — And a good talking ad in the man you have sold.

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11-5-2

## the editor's notebook

### Construction Activity Remains High

EXPENDITURES FOR new construction in September totaled \$5,112,000, about the same as in August, according to preliminary estimates of the U. S. Labor Department's Bureau of Labor Statistics and the Building Materials Division, U. S. Department of Commerce. Dollar outlays exceeded the 3 billion mark for the third consecutive time in September, to round out the largest quarterly volume on record — \$9.3 billion, in contrast to \$8.7 billion in the third quarter of 1951.

In most major construction categories, activity during September continued at high levels which is usual for this time of year. Private expenditures totaled \$2,037,000, and public, \$1,075,000.

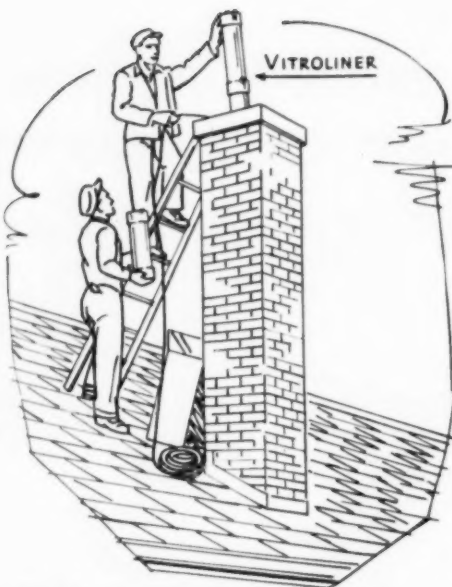
Comparing the record volume for July-September 1952 with that for third-quarter 1951, private residential building and public utilities construction were higher, and private non-residential building was lower — each by 9 per cent. Private new construction activity as a whole was up by 3 per cent.

### Shipments Up for Aluminum Sheet and Plate

SHIPMENTS OF ALUMINUM sheet and plate by member companies of The Aluminum Association's Sheet Division totaled 91,094,081 lb in August, slightly higher than the 85,049,202 lb shipped the previous month, and about on a par with August 1951 shipments of 91,888,728 lb.

### Defense Work Set Aside for Small Companies

THE ARMY and Small Defense Plants Administration (SDPA)



## VITROLINER Chimney Liner

Vitroliner vitreous enameled pipe is the best product on the market for protecting masonry chimneys. It has been in use for over twenty years throughout the United States.

Modern heating equipment using modern fuels is so efficient that practically no heat is wasted by exhausting high flue gas temperatures into the chimney. Therefore, the flue gases have a chance to condense before they are exhausted out of the chimney. This condensation contains acids which attack the mortar and brickwork of the chimney.

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- REDUCES FUEL CONSUMPTION
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- ASSURES LONGER LIFE

Available in All Sizes

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## CONDENSATION

ENGINEERING CORPORATION  
1511 W. FOTOMAC AVE., CHICAGO 51, ILL.

## the editor's notebook

(continued)

have agreed to set aside specific items for small companies. Interested companies should communicate with their nearest Dept. of Commerce office or to SDPA, Washington 25, D.C., describing their products and facilities and asking to be put on the list to get advertisements to be issued by the Army-SDPA "joint determination" program.

### Report Steel Distribution for Past 12 Years

THE STEEL companies of the United States shipped more than 737 million tons of finished steel in 12 years, 1940 to 1951, inclusive, of which more than 115 million tons went to warehouses, according to a report by the American Iron and Steel Institute. The warehouses, which supply hundreds of thousands of small customers, received 16.3 per cent of the total finished steel.

The largest industry consuming steel in the period was construction and contractor's products, which received more than 102 million tons, or 14.5 per cent of the total steel. The automotive industry was the next largest consumer, with 97.3 million tons, or 13.8 per cent of the total.

From nearly 46 million tons in 1940, the annual shipments rose to nearly 79 million tons in 1951, a gain of 72 per cent. One of the greatest gains was by warehouses and jobbers (including warehouses which serve the oil and gas industry). This group received about 14.4 million tons of steel in 1951, or 18.5 per cent of the total steel shipped that year, compared with about 6.7 million tons, or 15.3 per cent in 1940.

According to the institute's statistics, more than 196 million tons of sheet and strip steel were shipped in the 12 years. The sheet and strip shipments rose from approximately 12.5 million tons in 1940 to nearly 25.3 million



# Wolff Metal Service saves you money on

## ***Stainless Steel Sheets***

**Here's a fact it will  
pay you to KNOW**



In a product as costly as stainless steel sheets, the factor of "how much" is an important consideration. You know that. Then look at the inherent economy you'll find in the precision rolled sheets offered by Wolff Metal Service — the very finest stainless on the market.

Besides the basic quality of these sheets, their thickness tolerances are closer than A.I.S.I. standards. This saves you money. Here's how: Ordinary stainless sheets have an allowable thickness tolerance of plus or minus 10%. Wolff stainless sheets are held to specifications that allow only a plus or minus of 3%.

A micrometer saving of 7% is large. Remember . . . each one-thousandth of an inch variation in thickness represents 1.26 pounds on a standard 36" x 120" sheet. When you pay for sheets by the pound — and everyone does — this variation can mean a considerable dollars and cents difference to you. **SAVE** the next time you need stainless sheets, by calling WALbrook 5-3200, or write



Carbon Steels, Stainless Steels, Aluminum, Copper, Tin Plate, Expanded Metal, Metal Decorating



## the editor's notebook

(continued)

tons in 1951, an increase of 101 per cent. The plate shipments rose from about 4 million tons to 7.9 million tons, a gain of almost 95 per cent. Shipments of pipe and tubes increased from 3.9 million tons to over 9.3 million, a rise of 138 per cent.

### Factory Stoker Sales Total 10,149 Units

FACTORY SALES of mechanical coal stokers for the first seven months of this year totaled 10,149 units of all sizes and types, compared with 10,950 machines for the corresponding months of 1951, according to Bureau of Census reports based on information supplied by nearly all manufacturers of stoker equipment.

All sizes of stokers are behind sales of a year ago, but it is expected that sales in the ensuing months will be somewhat larger than the same period in 1951. A comparison of the cumulative totals for residential stokers during the January to July period shows: for bituminous stokers, 3674 units in 1952, 5423 units in 1951; for anthracite stokers, 3445 units in 1952, 1943 units in 1951; total for the class, 7119 units in 1952, 7366 units in 1951.

### Coal Association Sponsors Radio Programs

TAKING ADVANTAGE of intense local interest in high school athletic tournaments regularly held throughout Iowa, the Coal Heating Service Div. (National Coal Association) of Waterloo will again sponsor radio coverage of a large number of these contests. Spot announcements will be used during the broadcasts of nine high school football games and 20 basketball games in several tournaments. Experience with a similar schedule of broadcasts last year has made members of the group enthusiastic over the use of this advertising medium.



**IF**  
you can find  
a cubbyhole in a house —  
you can sell a



The SUN line of oil- and gas-fired automatic furnaces includes a wide range of sizes and capacities — from the large industrial installation of 224,000 Btu down to the pint-size HI-BOY that will fit into any closet or cubbyhole. The tiniest home is a prospect for the compact, space-saving HI-BOY.

The SUN line is backed by over 50 years of experience in furnace design and manufacture so when you install a SUN FUEL-MASTER you know you are delivering the utmost in heating satisfaction and long life.

P. S. If you haven't seen the latest



ask for full details.



## the editor's notebook

(continued)

### Increase Steel Production

IN THE WEEK starting September 22, production of steel in the United States totaled 2,160,000 tons, and the operating rate was 104.0 per cent of capacity. One month before, the production was 2,093,000 tons. Information is based on reports to the American Iron and Steel Institute from companies having 93 per cent of the steel capacity of the industry.

### Copper Supply Uncertain

NPA REPORTED an uncertain copper supply situation for the next two quarters at a recent IAC meeting of the Brass Mill Industry Committee, sponsored by the NPA's Copper Division. Reasons for the uncertainty were cited as: extent of stockpiling activities; taking up of the accumulated stock of copper in Chile; labor situation among domestic producers; and varied prices which exist in the domestic copper market.

### Nearly 6 Million Domestic Oil Burners In Use

ACCORDING TO a report by the Oil-Heat Institute of America, Inc., automatic oil heat is a big business today, with nearly 6 million domestic oil burners to be in use by the end of 1952.

### "Aim at Old Home Field," Heating Men Told

MANY SALES analysts say today that the big heating market in 1953 and the following years will be in the old home field. In a recent issue of The Heil Co. house organ, heating men aiming at this "modernization market" were advised to use the "open-end" mortgage as a sales tool. Extra loans needed to finance repair, remodeling or improvement can be added to these mortgages, with payments being spread out for as many years as the mortgage has to run.

To promote this plan, deal-

# well don't just sit there...



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Delay never "solves" anything; not even a trip to the Dentist. If you make ducts, the best time to order your Lockformer is right now. You'll make Pittsburgh Locks (and other seams) fifteen times as fast. You'll pay for the Lockformer quickly out of the "extra" profits it earns.

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City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_



An interesting booklet tells you the 12 reasons  
why your shop should have a Lockformer.  
Send the coupon for your free copy.



16 MEN AND EIGHT BRAKES OR  
ONE MAN AND A LOCKFORMER

## the editor's notebook

(continued)

ers can canvass local mortgage institutions to ascertain local possibilities. They can urge lending institutions which offer this type of loan to promote the idea, and can suggest a cooperative advertising program to acquaint home owners with this type of credit.

### "We Do It Differently in Australia"

WITH THESE WORDS Geoffrey C. Crockford, of Crockford and Robertson, Ltd., Melbourne, Australia, air control engineers, began to explain the methods of doing business in his country as compared with the way businessmen of the United States go after sales. Mr. Crockford, on an extended tour of the manufacturing plants of the U.S., came in to see your editor. He was impressed by the attitude of manufacturers here who produce their goods for a market created by advertising and through sales representatives, rather than basing their production schedules on the known orders on hand, as has been the policy in Australia.

Among the other trends that were of special interest to Mr. Crockford was the willingness of those he contacted to stop their work, show him around their places of business, and tell him anything about their processes and methods. The increase in attendance at conventions, representing the desire to exchange ideas and to learn the problems of the "other fellow", was, he felt, certainly an improvement over the unorganized activities of an industry.

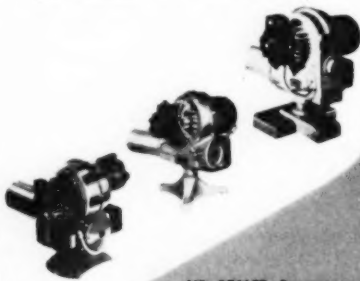
### Small Steel Companies Expanding Rapidly

IN PROPORTION to their size, some of the smaller steel companies have been engaged in the biggest expansion programs, according to the American Iron and Steel Institute. The plans of 25 small com-

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I decided to  
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OIL BURNER  
...because now I'm enjoying  
my best profit year



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Sold through Jobbers and  
Distributors. Also Special Applications  
for Furnaces and Boiler Manufacturers

"Automatic Oil Heat Exclusively Since 1921"

## the editor's notebook

(continued)

panies (with 175 to 3,900 employees) in 1951 and early 1952, prior to the strike of steel workers, showed that their combined annual steel-making capacity was expected to rise 50 per cent in two years from the start of 1951 to the beginning of 1953. That compares with an expected increase of about 12 per cent in the capacity of the entire industry during the two years.

One company, upon the completion of its expansion plans, will have increased its steel-making capacity nearly 200 per cent since 1940. Two others will have made gains of 93 and 95 per cent, respectively. Another will have expanded 70 per cent in the 13 years. Four companies which had no steel-making facilities at all in 1940 will have a combined capacity of about 870,000 tons by the start of next year, under their plans.

### Aluminum Scrap Order Amended

THE NATIONAL PRODUCTION AUTHORITY, Department of Commerce, has amended its aluminum scrap order by eliminating one of the reporting requirements in the distribution of aluminum scrap.

Under the amendment to NPA Order M-22 (Distribution and Use of Aluminum Scrap), owners or generators of aluminum scrap no longer are required to file Form NPAF-152 with NPA when making deliveries of quantities of scrap totaling 20,000 lb or more. NPA explained that this action eliminates considerable paper work for the Government and industry.

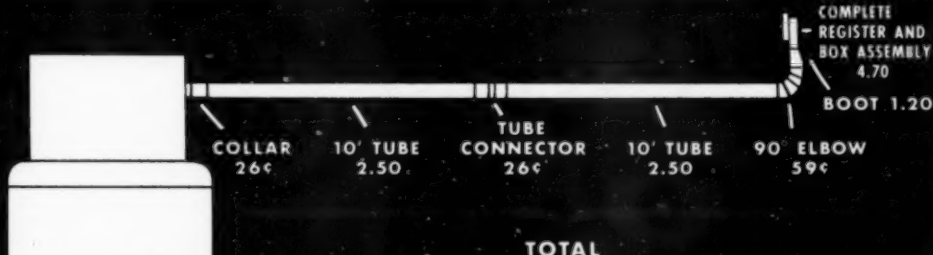
### Raise Aluminum Expansion Goals

A PRIMARY aluminum production expansion goal increase of 200,000 short tons per year and an invitation to American business concerns to send in firm proposals immediately if



# ARE YOU ABLE TO COMPETE?

Check the dealer net cost of a sample run of the Char-Gale 4½" system:



## IT'S SIMPLE ARITHMETIC!

Six runs can cost as little as...

Remember, these are packaged fittings!

### Additional Advantages of Char-Gale 4½" Packaged Fittings

Your estimates are quick and accurate, your installations simple and fast, with the Char-Gale 4½-inch system. The convenient Char-Gale packaging program saves storage space and eliminates the problem of damaged fittings. Customer satisfaction means easier sales in the future. And you are able to buy *all* the material for your small pipe installations from Char-Gale for convenience, savings and profit.



Char-Gale's new register-and-box unit is an integral part of the Char-Gale 4½-inch system, and its use is vitally necessary for proper performance. The register distributes heat evenly in all directions with no drafts or blasts of hot air. The register box needs no plaster frame and has a foam rubber gasket for a positive seal between register and box.

## Why the 4½-inch System?

Sound engineering principles lie behind the Char-Gale decision to standardize a 4½-inch rather than a 4 or 5-inch system. If you are not already familiar with the reasons for this decision, write us.

Place orders as soon as possible, to get into our production schedule.

# CHAR-GALE MANUFACTURING COMPANY

## the editor's notebook

they wish to participate in aluminum expansion, have been announced by the Defense Production Administration.

By this action, DPA pointed out, the previous expansion goal which called for a total domestic capacity of 1,546,000 short tons of primary aluminum by Jan. 1, 1955, is revised to 1,746,000 short tons, representing an increase of 15 per cent. In 1950, the domestic production was 719,000 short tons of primary aluminum.

Taking into account aluminum imports from Canada and other sources, and secondary aluminum production from scrap, it is estimated the total aluminum supply available to the United States will reach 2,375,000 short tons per year compared with 1,206,700 short tons in 1950.

Samuel W. Anderson, Deputy Administrator for Aluminum, said that "As a matter of public policy, we will attempt to secure this expansion from new domestic producers, if possible. It is hoped the expansion can be accomplished without the necessity of making government loans or financial guarantees, but accelerated tax amortization will be available.

"The requirements for aluminum for all-out mobilization recently established by the Munitions Board are so large and accelerate so sharply that it is clearly necessary to move at once to secure additional capacity to protect the country from a crippling bottleneck in the event of war."

### Increase Ceiling Price of Anthracite Coal

OPS HAS AUTHORIZED A ceiling price increase of 20 cents per net ton f.o.b. the mines on all sizes of anthracite. This action, taken on industry application, is intended to cover the added 20 cents that anthracite producers must pay into the coal miners' health and

**AT-A-GLANCE**  
*Sentry*  
**TANK GAUGES**

**REMOTE READING  
INDOORS • OUTSIDE  
UNDERGROUND**

**ACCURATE, DEPENDABLE,  
WEATHERPROOF GAUGES**  
**Easy to install... Easy to read!**

Unaffected by specific gravity changes or variations, Sentry Remote Gauges accurately indicate liquid level at all times. Simplified mechanical operation eliminates unnecessary fittings, bulbs or levers for servicemen to tamper with as well as his need for access to building. Remote Gauge may also be combined with At-A-Glance Direct Gauge, shown below, for readings at both tank and remote location if desired. Non-corrosive, stainless steel and brass extension lines connect tank float with heavy-duty cast aluminum, weatherproof, thermometer type indicator — calibrated in fractions. Unconditionally guaranteed. Write for descriptive literature.

Type D-O  
and D-10  
Gauge for  
basement tank  
installations  
with 2" and  
1½" openings  
respectively.

Type D-U  
Gauge for  
underground  
tank  
installations.  
Fits 2" and  
1½" openings only.

*Sentry* **AT-A-GLANCE**  
**For accurate DIRECT tank readings**

Fastest selling, most popular gauge in the industry. Simplified mechanism eliminates gears, cams, springs and magnets that wear out and cause trouble. Durable construction with patented assembly featuring unbreakable, fog-proof, heavy-duty plastic dome with printed, double scale between for clear, easy-to-see readability from any direction. Gauge is Underwriters' Listed and will withstand in excess of 70 lbs. air pressure per sq. inch. Entire unit is non-corrosive and guaranteed leakproof under pressure filling and against defective operation. Quick, simple to install even on partially filled tanks. Write for complete descriptive literature.

**AT-A-GLANCE  
OIL GAUGE**

**KRUEGER Sentry GAUGES**  
**GREEN BAY • WISCONSIN**

## the editor's notebook

welfare fund. Under an interim agreement recently reached with the United Mine Workers of America, the producers' payment into the fund was raised from 30 cents to 50 cents per net ton.

A retail anthracite dealer may pass through to a customer only the actual amount of price increase if and when he pays a higher price to the producer.

The new ceiling adjustment is provided by Amendment 5 to Ceiling Price Regulation 4. It is in addition to ceiling increases for certain sizes of Pennsylvania commercial anthracite which were granted under Amendment 4 to CPR 4. That action resulted from an OPS survey which showed the industry was entitled to price relief under the OPS industry earnings standard, which provides that an industry not earning at least 85 per cent, before taxes, of earnings for the best three years from 1946 to 1949, can apply for higher ceilings.

### Seek Tin and Scrap From Old Cans

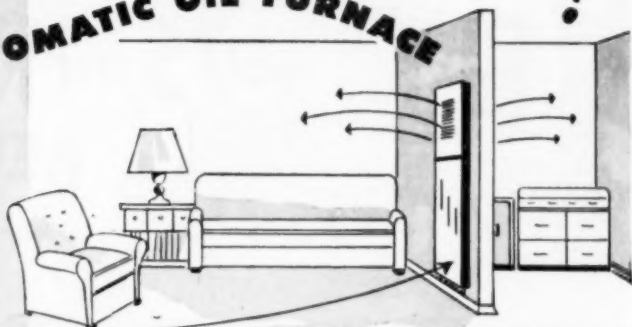
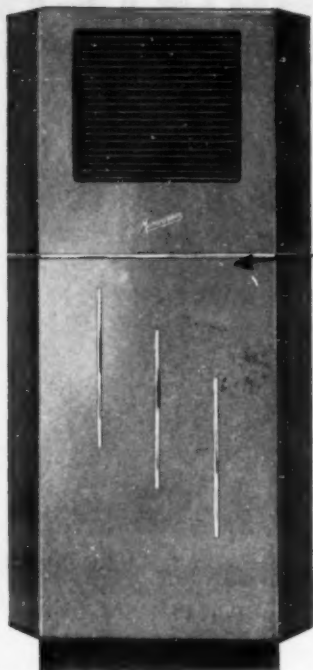
UP TO A MILLION tons of scrap a year can be recovered from the rubbish dumps of large cities in this country if research under the management of a committee of American Iron and Steel Institute is successful.

Steel companies are preparing to sponsor such research, aimed at finding an economical method for removing the tin from used tin cans. Thus, they will be able to recover the tin and to use the steel in the cans as scrap for open hearth steel-making furnaces.

Two research projects will start under the auspices of the Steel Industry Scrap Mobilization Committee. One will be conducted at New York University and will be devoted to pyrometallurgical methods. The other will be at Armour Research Foundation and will be concerned with chemical methods of recovery.

# SELL *Monogram* and be **FIRST** in SALES!

## THE NEW AUTOMATIC OIL FURNACE



### ...a CENTRAL HEATING PLANT at SPACE HEATER COSTS!

Solves the problem of low-cost heating in small homes. There's none so adaptable yet so efficient in delivering clean, uniform heat. The MONOGRAM Oil Furnace performs so perfectly due to its exclusive "Forced Air" Burner... the patented vaporizing burner that gives more BTU's per gallon of oil than any other... that owners do not hesitate to praise both its efficiency and economy!

#### IDEAL FOR SMALL HOMES

Heats four or five room homes comfortably. Affords dual register heating from the wall as shown, and is fully automatic. Heat is thermostatically controlled all 24 hours of the day.

#### REQUIRES NO EXPENSIVE DUCT WORK or FLOOR SPACE

The MONOGRAM OIL FURNACE fits in the wall. Can be installed in a day, since no duct work is required, nor does it take up valuable floor space. Heated air is forced out at eye level. Furniture may be placed directly in front of the Furnace!

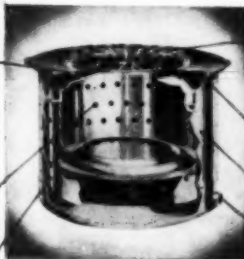
#### ONLY 4" OF FURNACE EXTENDS IN YOUR LIVING ROOM

That's why the MONOGRAM FURNACE is ideally adapted to small homes where space is valuable. The beautiful outer cabinet in baked enamel fits into any decorative scheme. It's attractive as well as serviceable.

TEETH ON TUBULATOR RING BREAK UP SECONDARY AIR INTO SMALL STREAMS AND MIX IT WITH BURNING GAS AT A POINT OF COMBUSTION

GAS AND PRIMARY AIR BURNS HERE

GAS AND PRIMARY AIR MIX HERE



OIL VAPORIZING PAN

ROTOR PLATE PRODUCES SHORTER ACTIVE FLAME, MORE HEAT FROM SIDES OF HEATER

SECONDARY AIR INLETS TO COMPLETE COMBUSTION

PRIMARY AIR INLETS

OIL INLET

#### WITH "FORCED AIR" BURNER THAT PRODUCES MORE HEAT AT LESS COST...

This exclusive feature of the MONOGRAM Automatic Furnace sets it apart... for greater performance and economy. Patented designing of this burner enables it to produce more BTU's of heat for its size, to deliver a wider range of operation and to work with equal efficiency in mild or cold weather.

#### SPECIFICATIONS A569 MONOGRAM OIL FURNACE

BTU Rating.....	65,000	Gauge of Combustion Drum.....	20
Combustion Drum.....	13 x 48	Max. Oil Consumption per 24 hrs. Gal. 14½	
Height from floor of front of cabinet.....	74½	Min. Oil Consumption per 24 hrs. Gal. 1½	
Height from floor of back of cabinet.....	72	Grade Distillate recommended.....	No. 1
Width of Front.....	32	Motor.....	45 watt-1500 RPM
Width of Back.....	24	(High Impedance Protected)	
Gauge Baffle.....	18	Shipping Weight.....	300 lbs.

WRITE TODAY FOR FULL INFORMATION

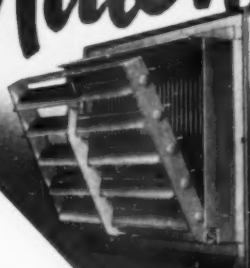
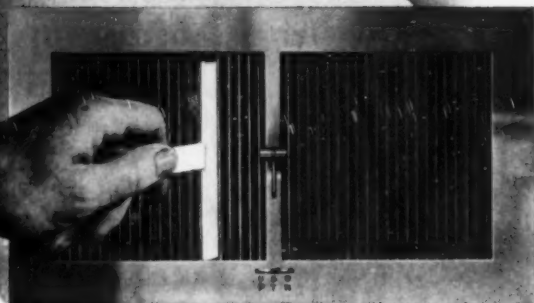
**QUINCY STOVE  
MANUFACTURING CO.**

QUINCY, ILLINOIS

FOR AIR CONDITIONING AT ITS BEST  
USE



NO. 75, THE REGISTER  
NO ONE HAS BEEN ABLE  
TO *Match*



In all the 15 years since it was first introduced, no one has been able to come up with a popularly priced air conditioning register equal in efficiency to the H & C No. 75. The answer lies primarily in its patented **TURNING BLADE VALVE** . . . which does what no conventional valve can do. It distributes the air-flow evenly to all parts of the register face. This results in up to 30% **LESS RESISTANCE** and better distribution to the farthest parts of the room.

On those jobs where the very best is expected, be wise, use the H & C No. 75. It costs no more than other multi-deflection registers. See it at your H & C Jobbers. Complete description and engineering data are contained in our current catalog — No. 52.

**HART & COOLEY MANUFACTURING CO.**  
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A man in business for himself knows that his future depends to a large extent on the quality of his merchandise. Nothing creates a finer reputation than the good will and friendship won through the sale of quality products. Waterbury Dealers enjoy such a reputation, plus the advantages of a sound dealer-distributor-factory policy. These factors assure each Waterbury Dealer of a successful, profitable future.

### Waterbury Furnaces & AIR CONDITIONERS

For more than 45 years, Waterbury furnaces and winter air conditioners have been designed and engineered to provide heating satisfaction. Every Waterbury provides efficiency, economy and dependability. And there's a Waterbury for every size home and every type of fuel.



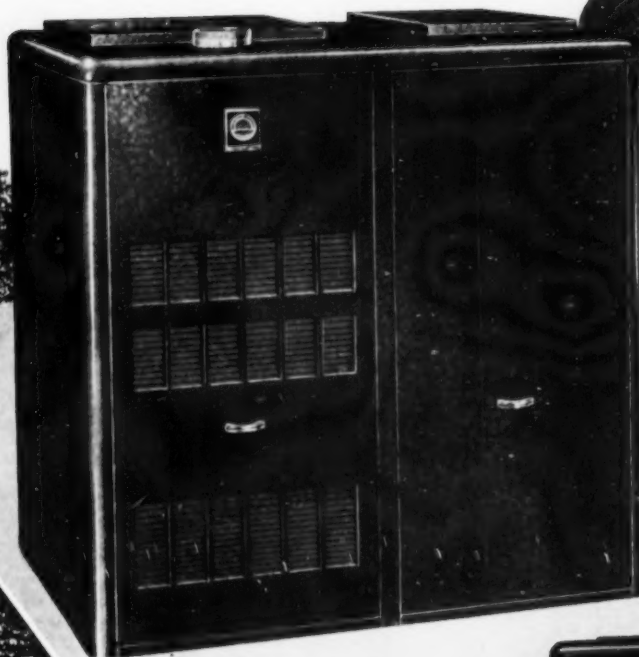
*The* **Waterman-Waterbury Co.**

OVER 45 YEARS OF WARM AIR HEATING

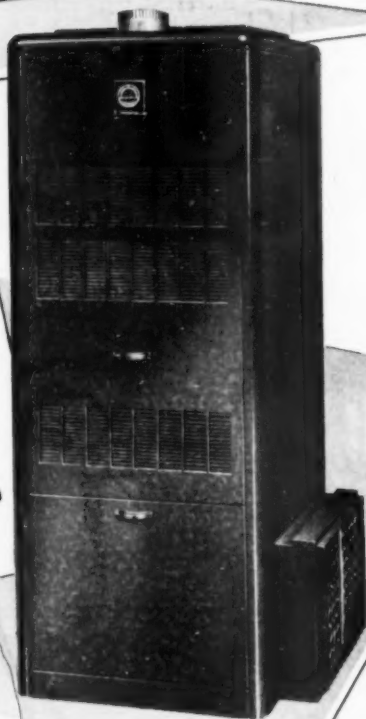
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"IT'S WHAT'S UNDER  
THE CASING THAT COUNTS!"

*If yours*



**SENECA**  
for basement installation  
**IN 4 SIZES**  
ranging from  
85,000 to 150,000 Btu  
input per hour



**WYANDOTTE**  
for utility room  
installation  
**IN 5 SIZES**  
ranging from  
55,000 to 125,000 Btu  
input per hour

**is a gas market...**

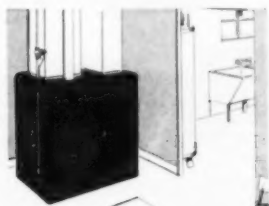
## **you can "corner" it with these 2 winter air conditioners by AMERICAN-Standard**

● The Seneca—for homes with basements—and the Wyandotte—for first floor installations—meet the heating requirements of modernization jobs and new construction in your community.

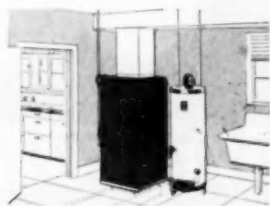
Both winter air conditioners are quality built to assure better heating. The heating element of each is made of durable, corrosion-resistant copper bearing steel welded into an integral unit. Large heating surfaces are arranged to eliminate hot and cold spots, resulting in greater efficiency and longer life. Correctly placed baffles divert hot gases to sides of element, heating entire element uniformly. The blower assembly floats on resilient mounting for quietness. Large oil reservoirs on

self-aligning bearings assure long bearing life with minimum attention. Individual controls are the finest available. Burners are of cast iron with patented high temperature alloy ribbons.

The Seneca is made in four sizes—from 85,000 to 150,000 Btu input per hour—and the Wyandotte is made in five sizes—ranging from 55,000 to 125,000 Btu input. Manifold piping and controls for the Seneca are sub-assembled, while the Wyandotte is shipped completely assembled and pre-wired. Both units burn natural, mixed, manufactured, liquefied petroleum, or LP-air gas efficiently and economically. For more detailed information, contact your wholesale distributor.



**Just right for  
today's small to average sized  
modernization jobs  
or new construction**



**THE SENECA** Winter Air Conditioner is ideal for transforming bleak basements into attractive, useful rooms. All controls are concealed, yet easily accessible.

**THE WYANDOTTE** is only about 2-ft. square. It is ideal for minimum-space installations, in first floor utility rooms, alcoves, closets, kitchens, or small basements.

American Radiator & Standard Sanitary Corporation, P. O. Box 1226, Pittsburgh 30, Pa.

# **AMERICAN-Standard**

## **HEATING**



*Serving home and industry*

AMERICAN-STANDARD • AMERICAN BLOWER • CHURCH SEATS • DETROIT LUBRICATOR • KEWANEE BOILERS • ROSS HEATER • TONAWANDA IRON



# **MILCOR<sup>\*</sup>** *Forced Air Pipe and Fittings* **standardized for faster, easier installation**

**A complete, related system** — A family of standardized units engineered to work together, to meet almost every condition. Includes round pipe, rectangular duct, elbows, angles, reducers, end caps, take-offs, stack adapters, transformers, etc.

**Patented, quick-locking features** — you get snug, solid joints in a jiffy — without special tools. Standard matched accessories fit most any situation. You cut hours from roughing-in and erection time.

\*Reg. U. S. Pat. Off.

S-109

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**4023 WEST BURNHAM STREET**

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# News Round-Up



## **Continue Small Business Hardship Program**

THE SMALL BUSINESS Hardship Program is being continued for the fourth quarter of 1952 in order to help any small firms which qualify for such assistance, the National Production Authority, Department of Commerce, has announced.

The criteria established for obtaining additional allotments of controlled materials from the Small Business Hardship Account for the third quarter of this year remain practically unchanged for the current quarter.

## **Authorize Salary Increases for Sales Employees**

THE SALARY STABILIZATION BOARD has announced that sales employees, compensated in whole or in part by commissions, will be permitted to receive the benefit of certain general increases which, up to the present, have been authorized only for sales employees and others paid on a straight salary basis.

This policy which is set forth in Amendment No. 1 to General Salary Stabilization Regulation No. 5, permits the employer to make these adjustments without prior approval of the Office of Salary Stabilization. In addition, the amendment authorizes the Office of Salary Stabilization to make adjustments in commission rates.

The provision dealing with adjustments of commission earnings states that during the calendar year 1952, an employer may make adjustments in sales employees' compensation, paid in whole or in part as commissions, in an amount not exceeding 15 per cent of the aggregate commission payments made to all such employees during the calendar year 1950.

Proportionate adjustments may be made for increases in the number of employees thus paid and must be made when the number decreases.

The employer may distribute the adjustments in compensation in his discretion among these employees based on the sales they have made or other measure of their performance. These adjustments must be made as supplemental payments at such time as the employer may determine. Employers are warned, however, that this type of adjustment may not be made through an increase in any commission rate.

Under Section 11 of the amendment, the Office of Salary Stabilization is authorized to approve applications for changes in commission rates of employees paid in

whole or in part by commission, provided that such changes conform to industry or area practice and are found not to be unstabilizing.

The Office of Salary Stabilization also is authorized to approve applications for adjustments in expense allowances or compensation to reflect an actual increase in the cost of the expense items required to be paid by sales employees, as well as those to correct hardships or inequities.

## **Approve Laying of Pipe Lines**

DPA this week announced approval of a PAD-proposed program that calls for the laying of 7,200 miles of large-diameter (16-in. OD or larger) transmission lines and 17,700 miles of small-diameter (less than 16-in. OD) field, gathering, and distribution lines in 1953.

This approval does not imply any promise that materials for the program will be available. It does, though, permit PAD to recommend issuance of necessity certificates for accelerated tax amortization on facilities required to fulfill the program.

If it is assumed that the large-diameter lines would average the equivalent of 20-in. diameter,  $3\frac{1}{8}$ -in. wall thickness, the transmission lines would take 1,500,000 tons of steel, according to PAD. If it is assumed that the small-diameter lines would average the equivalent of 6- $\frac{5}{8}$ -in. diameter, 7/32-in. wall thickness, these lines would take 700,000 tons of steel.

## **FHA Sets Up Insuring Office for Delaware**

DUE TO INCREASED FHA volume of applications for insured mortgage loans in the State of Delaware, a complete insuring office has been established there.

Commissioner Walter L. Greene, Federal Housing Administration, has announced the appointment of Matthew Francis Judge of Wilmington as director of the Delaware office.

Mr. Judge has a wide acquaintance in banking and finance fields within the state, having served as vice president of the Equitable Trust Co. prior to coming with the FHA. He has specialized for many years in construction loans, real estate and mortgage financing.

Heretofore, the FHA has maintained a service office in Wilmington operating under the jurisdiction of Philadelphia.

# News Round-Up



## Cities Benefit from Gas Pipe Lines

CITIES of 50,000 population or more which will benefit as a result of Federal Power Commission natural gas pipe line authorizations include:

*Alabama* — Birmingham and Mobile  
*California* — Berkeley, Fresno, Oakland, Sacramento, San Francisco, San Jose, Stockton, Los Angeles, Glendale, Pasadena, Santa Monica, and San Diego  
*Colorado* — Denver and Pueblo  
*Connecticut* — Stamford, Bridgeport, and New Britain  
*District of Columbia* — Washington  
*Georgia* — Atlanta and Columbus  
*Illinois* — Berwyn, Cicero, Evanston and Oak Park  
*Indiana* — Evansville  
*Iowa* — Des Moines and Sioux City  
*Kansas* — Kansas City, Topeka and Wichita  
*Kentucky* — Lexington and Covington  
*Louisiana* — New Orleans, Baton Rouge and Shreveport  
*Maryland* — Baltimore and Silver Spring  
*Massachusetts* — Springfield, Holyoke, Worcester, Lynn, Lowell, Malden, Medford, and Lawrence  
*Minnesota* — Minneapolis and St. Paul  
*Mississippi* — Jackson  
*Missouri* — Kansas City and St. Joseph  
*Nebraska* — Lincoln and Omaha  
*New Hampshire* — Manchester  
*New York* — Albany, Buffalo, Rochester, Syracuse, Troy, Utica and Binghamton  
*Ohio* — Columbus, Springfield, Dayton, Toledo, Hamilton, Cincinnati, Akron, Canton, Cleveland Heights, Lakewood and Youngstown  
*Pennsylvania* — Pittsburgh, Altoona, Johnstown, York, Reading, Allentown, Bethlehem, Harrisburg, West Mifflin, McKeesport, and Erie  
*Tennessee* — Nashville  
*Texas* — Houston, Beaumont, Galveston, Austin, San Antonio, Port Arthur, Corpus Christi, and Wichita Falls  
*Virginia* — Norfolk, Portsmouth, Richmond and Arlington  
*West Virginia* — Charleston, Huntington and Wheeling

The projects which will benefit these cities, and numerous smaller communities, are those estimated to cost \$700,000 or more each.

## Interpret General Wage Regulation

THE WAGE STABILIZATION BOARD has issued a short bulletin containing questions and answers on General Wage Regulation 21. They illustrate various provisions of pension plans and profit-sharing plans of the deferred compensation type that conform to the requirements of the regulation, and also, provisions which will generally be approved upon review by the board although they do not meet the requirements of the regulation.

The bulletin answers such questions as: "How may a pension plan or a profit-sharing plan of the deferred compensation type be established? Will the Board disapprove pension plans providing for a normal retirement

age at less than age 65? May a pension plan filed under this regulation provide death benefits?"

## Survey Reveals Rising Gas Demand

POTENTIAL SALES of gas by the gas utilities of the country are expected to rise 40 per cent over the next five years. Assistant Deputy Petroleum Administrator Howard B. Noyes told the Gas Industry Advisory Council recently.

A survey recently completed by the Petroleum Administration for Defense revealed that potential sales of gas by the industry are expected to go from an estimated 49,700 million therms in 1951 to 69,300 million therms in 1955.

This PAD survey, Mr. Noyes told the council, provided the basis for the gas-industry expansion program for 1953 approved by the Defense Production Administration.

## Smoke Association Changes Name

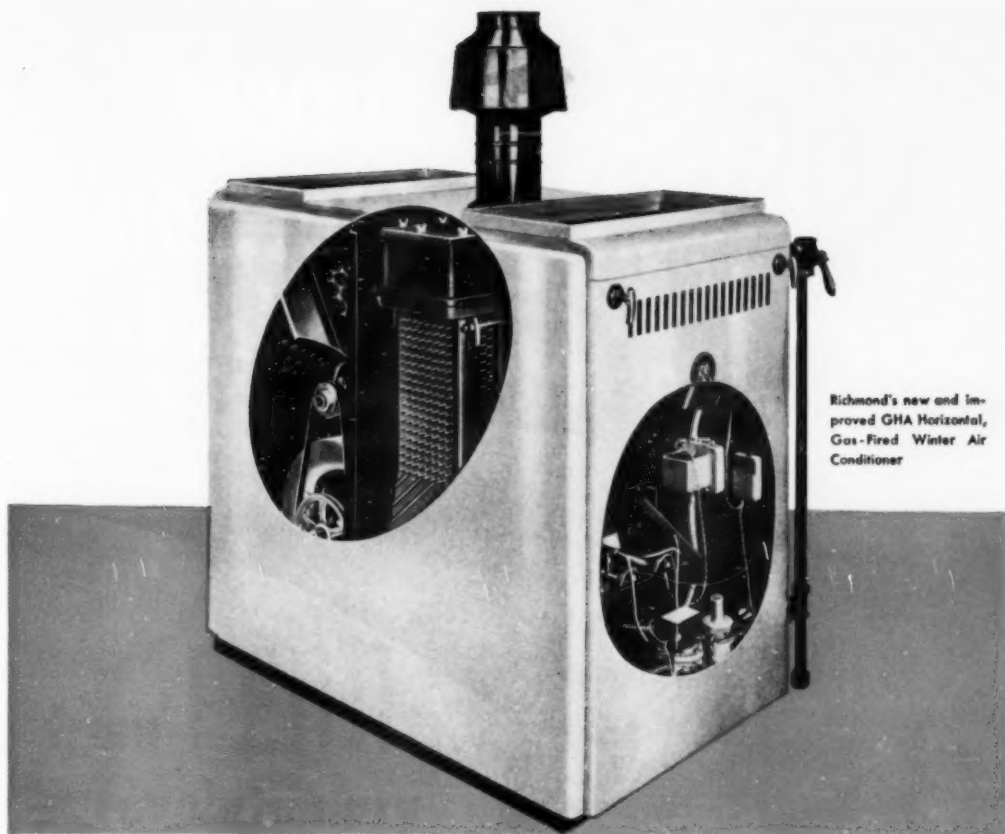
AIR POLLUTION Control Association is the new name of the old Smoke Prevention Association of America, and, more recently, the Air Pollution and Smoke Prevention Association of America. The association, which has headquarters in Pittsburgh, has fixed the dates of its annual meeting, which will be held May 25 through 28 at the Lord Baltimore Hotel, Baltimore.

## Ask FPC to Authorize 860-Mile Pipe Line

GULF INTERSTATE GAS CO., a new corporation, of Houston, Tex., has applied to the Federal Power Commission for authorization to construct an 860-mile pipe line, extending from southern Louisiana to a point in north-eastern Kentucky, to transport natural gas for a subsidiary of The Columbia Gas System, Inc.

The proposed pipe line system, which has a total estimated cost of about \$127,337,000, would be used to transport 375 million cu ft of gas per day for the account of United Fuel Gas Co., of Charleston, W. Va. The gas would be delivered to United Fuel in Boyd County, Ky., and to Central Kentucky Natural Gas Co., an affiliate of United's.

The main 860-mile, 30-in. pipe line would originate at a point in Acadia Parish, La., and extend across Mississippi and Tennessee, terminating in Boyd County, Ky. The project also would include 229 miles of various size lateral lines and five compressor stations, each with a capacity of 8000 hp. The application says that the line is designed for a capacity increase to 565 million cu ft of gas daily, by the addition of compressor facilities.



Richmond's new and improved GHA Horizontal, Gas-Fired Winter Air Conditioner

## A Fine Unit Now Made Even Finer!

Now the popular Richmond GHA will deliver more heat more efficiently than ever before. Thanks to a new sectionalized heating element, with easily removable individual burners for each replaceable section . . . all designed to produce maximum heating performance.

Other GHA features include: cast-iron heat exchanger for longer life and greater re-

sistance to corrosion . . . new single-unit design for installation on combustible floors . . . handsome white enamel jacket . . . full range of sizes (single: 75,000 to 175,000 input BTU/hr.; twin: 200,000 to 300,000 input BTU/hr.) . . . fully approved by the AGA.

For small, medium and large homes where quality is desired, use this new and improved GHA unit.



# RICHMOND

RICHMOND RADIATOR CO.—AFFILIATE OF REYNOLDS METALS CO.

Use your whistler or Bell Coupon today.

AS-11

Richmond Radiator Company  
19 East 47th Street, New York 17, New York  
Please send me more information and literature  
on the Richmond GHA Unit. No obligation,  
of course.

NAME

COMPANY

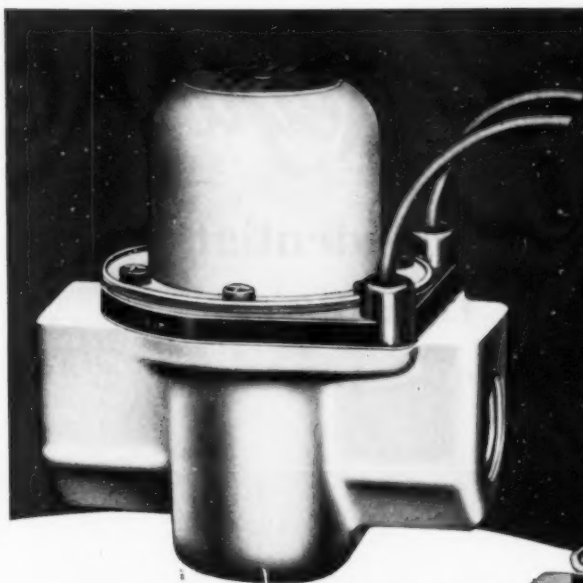
ADDRESS

CITY  ZONE  STATE

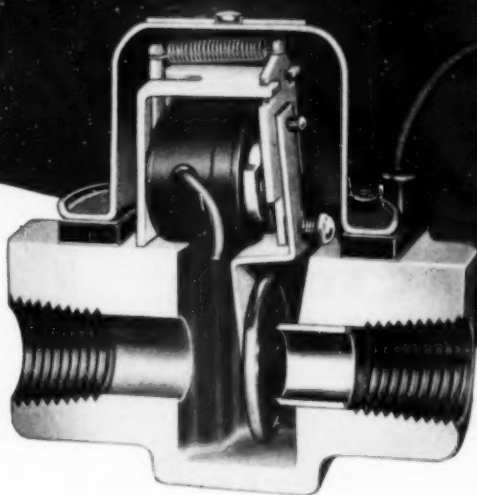
We are ☐ plumbing wholesalers ☐ plumbing contractors ☐ building contractors.

**LOOK... got a new  
kind of gas valve...one  
that's really quiet!**





not a solenoid...  
not a diaphragm...  
**BUT A NEW IDEA!**



## from **PENN...** a revolutionary **NEW GAS VALVE**

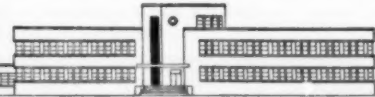
**A.G.A. Approved**

Here at last is a compact, dependable gas valve that *operates so quietly* you can hardly hear it. No more noise . . . no more slam-bang operation.

Look at the cross-sectional view and you'll see how simple, how efficient this new gas valve design idea really is! It permits "straight-through" flow of gas. And the stainless steel seat is in a *vertical* position which makes it *self-cleaning*. The self-aligning, full-floating valve disc has a flannel-backed Buna-N face to give a soft seat and assure

positive shut-off of gas. There's *no leakage*.

If you want a gas valve that is *really* quiet, efficient and dependable . . . then *try* the new **PENN** Series 925. You'll agree it's the best gas valve on the market today. The Series 925 is available in  $\frac{1}{4}$ ",  $\frac{3}{8}$ ",  $\frac{1}{2}$ " and  $\frac{3}{4}$ " sizes for low or high voltage applications. Get the full story . . . write **Penn Controls, Inc., Goshen, Indiana**. Export Division: 13 E. 40th Street, New York 16, N. Y. U.S.A. In Canada: Penn Controls Limited, Toronto, Ontario.

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**AUTOMATIC CONTROLS**

**FOR HEATING, REFRIGERATION, AIR CONDITIONING, GAS APPLIANCES, PUMPS, AIR COMPRESSORS, ENGINES**





# The Finest Registers

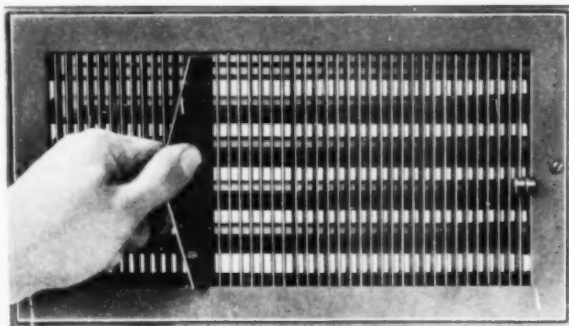
For Residential Warm  
Air Heating...

## FOR STANDARD A-C SYSTEMS:

**U. S. No. 256**

Features: — non-vision-lateral diffusion — Four-Way Flow — Perfect Lever Operation.

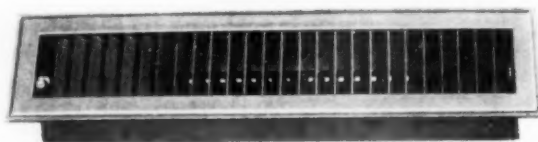
Adds tone and creates ultra-efficiency in Air Distribution on all air-conditioning Warm Air Systems.



## FOR PERIMETER and SMALL PIPE SYSTEMS:

**U. S. No. 410**

This new diffuser floor register for Perimeter and Small Pipe Heating Systems gives you the wide air-diffusion required to blanket windows and cold walls. Vanes are



set at graduated angles, but can be, with proper tools, adjusted. Perfect valve operation — with balancing set-screw. When required, the lever-operated valve can be set to deflect air slightly away from vertical to prevent soiling walls, drapes, and curtains. Made in seven sizes to meet all needs. U. S. also supplies the last word in Base Diffuser Registers — No. 132 $\frac{1}{4}$ " — for 4"-4 $\frac{1}{2}$ " — and 5" small pipe systems.



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## *Arnold Kruckman's Washington Letter*

# OPS To Form New Advisory Committee

A RAIN CARRYING Equipment Industry Advisory Committee is soon to be created by the OPS. It will represent large and small firms engaged in the production of spouts, gutters, roofing and the many other products in that category made of sheet metal. The members will be representatives of the twelve geographical areas in the United States as divided in the Federal Reserve Board system.

The committee has come into existence, according to OPS sources, at the request of members of the industry who feel it is difficult to cope with the increase in costs stemming from labor, higher prices of steel, and other metals, as well as transportation. It appears there are a number who have not taken advantage of the pass-through recently formally permitted by OPS in metals, in outbound freight, and other OPS orders, and that some have not taken advantage of provisions of the Capehart Amendment under which they could legitimately increase prices by reason of increases in costs. Particularly, there seems to be some confusion about GOR-35 which has to do with a number of aspects of the merchandising of things made of steel, aluminum and copper.

Apparently, the first order of business of the committee will be to satisfy the desire of the industry to get a sharp and clear understanding of the manner in which it can use the orders that permit it to pass-through the various cost increases.

The new committee comes under the OPS Building Materials Branch, which is headed by Irving Rubenstein, chief. Other officials of the branch include Edwin J. Uthoff, chief of the Mechanical Building Equipment Section; Leo Wasser, legal staff; Leon Agranat, branch economist; Millard Klein, economist. Sheet metal products are in charge of Leonard Macomber, who is located at 2544 Tempo S Building in Washington, D. C. Mr. Macomber has a thorough knowledge of every aspect of the business which involves sheet metal. He handles all of it for OPS, except a very meager part which comes under the Fabricated Products Section, of the Iron and Steel Branch. Howard H. Needham is chief of the Fab-

ricated Products Section. Chief of the branch is William Kerber.

### **Manufacturers Request Price Relief**

Apparently manufacturers of furnaces, cast iron boilers and radiators are experiencing the same difficulties that produced the Rain Carrying Equipment Industry Advisory Committee. Not long ago representatives were here from Crane Co., American Radiator & Standard Sanitary Corp., The National Radiator Co., Thatcher Furnace Co., and others, to get an explanation of the manner in which they could get ceiling price relief due to substantial increases in the cost of labor, materials, freight and other costs. As result of this meeting, a formula may come out which might give sheet metal, radiator, and other industries a flat price adjustment, such as was given to the steel industry. Generally, these various allied industries can get higher ceiling prices if they can show that their current earnings are below 85 per cent of the average earnings in the best three of the four years between 1946-1949, inclusive, adjusted to reflect changes in net worth. OPS is engaged in making earnings standards studies, which will take in this type of sales, cost, operating and financial data, and will unquestionably call upon the various industries to supply the data.

### **New Chief for NPA Forge and Press Section**

They have a new chief at NPA Forge and Press Section, which includes all products of sheet metal. He is W. H. Bennett who came to Washington in October from the Hydraulic Press Mfg. Co. at Mt. Gilead, Ohio. Mr. Bennett succeeds George R. Kinney, vice president of the V & O Press Mfg. Co. at Hudson, N. Y. Over in NPA, especially in the Metal Working Equipment Branch, they try their best to rotate the incumbent heads of branches and sections, every six months.

Mr. Bennett suggests that he will be glad to help anyone in the sheet metal industry who requires any counsel or aid that he and his associates may supply. His address is 441 G Street, N. W. Mr. Bennett says



## Washington Letter

he's conscious of the fact that the industry doesn't need much help from his part of NPA because steel, aluminum and copper are fairly easy. Actually, no one really knows what may happen in regard to steel in the first quarter of 1953. The steel mills are cautiously hanging on to much military steel that is not being used at present. There is one responsible group here which thinks the supply in the first quarter will be only 60 per cent of the usual norm. But there is another equally responsible group which tells you that there will be steel enough for all needs, except the most extraordinary. Mr. Bennett says you can't tell, that there is no yardstick yet available to determine the question. He does suggest that copper is much easier, and for that reason that the demand which has been crowding aluminum will ease, and aluminum will be more available. Apparently there are still some priority troubles. When these arise, Mr. Bennett and his group are there to work out the needed directive.

Sheet metal and its problems come under the general supervision of the Metal Working Equipment Branch, of which E. R. Branning, a machine tool industrialist, is the assistant director. Mr. Branning is easy to reach, and willing to help, and apparently has a very intimate and extensive knowledge of the sheet metal industry. He comes from the Warner-Swasey firm in Cleveland. The Metals and Minerals Bureau has announced that the Tin, Lead and Zinc Division has been combined with the Miscellaneous Metals and Minerals Division. Erwin Vogelsang, director. Mr. Vogelsang, prominently identified for a long time with the Metals and Minerals Division of the Department of Commerce, also absorbs the Salvage Division; and Edward W. Greb, former head of the Salvage Division, is named program executive for salvage in the Miscellaneous Metals and Minerals Division.

### Advise on Military Production Levels

There is a committee which has been holding meetings every week — or almost every week — for the past eighteen months. It came into existence as result of an idea that occurred to Charles E. Wilson when he was the director of the Office of Defense Mobilization. This committee is headed by Harold S. Vance, chairman of the board and president, Studebaker Corp. The other members are Clay Bedford, president, Chase Aircraft Co., Inc.; Admiral W. H. P. Blandy, Ret.; Lt. General

LeRoy Lutes, USA, Ret., president, Pacific Tire and Rubber Co.; Lt. General K. B. Wolfe, USAF, Ret., president, Oerlikon Tool and Arms Corp., an international Swiss cartel; Rear Admiral Louis L. Straus, USNR; and Manly Fleischmann, former head, Defense Production Administration.

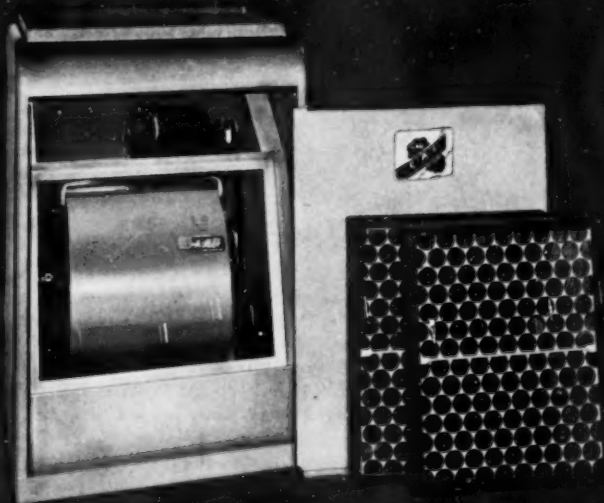
The committee was requested by mobilizer Wilson to produce a program for a so-called plateau pattern of production, "to maintain total production of military goods through 1953 and 1954 at the high levels scheduled to be achieved early 1953". Obviously, this is a large order, and can be made to hold many things. The committee is ready to make preliminary recommendations, but not a complete report. A forecast of the preliminary recommendations is now circulating among the top level officials of ODM, NPA, OES, the Defense Department, the White House, and OPS. Apparently the recommendations promise (1) savings — not immediate but for the long term — in the cost of military production; (2) keeping the risk of obsolescence at a minimum; (3) equipping industry to roll out the multiplicity of products needed, and in the volume necessary if an all-out war should come.

Mr. Vance calls the report a memorandum. He does not wish to release it to the public until he, and ODM director Fowler and Defense Secretary Lovett can exchange views on it. Here is a summary of what the report contains: it stresses productive capacity rather than the output of end products; it urges expenditures be shifted from production itself to the build-up of production lines and other facilities; the shift in expenditures is to be made without impairing production, and within the budget requirement.

### Selective Production Stressed

Mr. Vance and his associates suggest production has reached a point where a selective approach is indicated, rather than an effort to turn out everything possible as quickly as possible. They declare spare equipment or extra production is not needed. It would merely pile up wastefully in various depots. Obsolescence, rapid in specialized military equipment, would make much material useless. On the other hand, machinery for production becomes obsolete much less quickly. The committee holds the production line should be set up, and should be producing at a retarded rate, but should continually be revamped to keep it current with design

# So You Want Package Units!



## Complete size ranges...to meet

### \*C. A. C. requirements... models 8096, 8106, 8126, 8124

You want smart, attractive design—this is it! Sizes to meet your needs! Compact enough to occupy minimum space! Cabinets are assembled with blowers attached! Easily removable access door! Two oversize filters! Quiet, efficient and economical to operate!

- for furnace sizes 18" to 28" bowl
- c.f.m. 600 up to and including 1800
- most efficient filters on the market
- will accommodate a range of from 66,000 to 196,000 btu/hr bonnet output at 100° temperature rise

#### \*C.A.C.

These LAU units are built for Continuous Air Circulation. For full explanation of the principles involved in C-A-C please refer to MANUAL 6 — from National Warm Air Heating and Air Conditioning Association, 145 Public Sq., Cleveland 14, or write us direct.

### Complete Line of Larger Package Units...up to and including 25-inch Blower

**THE LAU BLOWER COMPANY • Dayton 7, Ohio**

changes and adoption of new models. The time necessary for expanding the Armed Forces in case of attack would also provide some time for throwing the production line into high gear.

The committee hurried out this interim memorandum so that it can be considered in connection with the military budget for fiscal year 1954, which is now in the works. The committee, informally, emphasizes that it does not wish to become involved in any political debate over whether the military budget could be reduced.

An understanding of the essence of these recommendations seems essential to all business men, since it forecasts what probably will be the 1953-1954 emergency defense production chart.

#### Two New Construction Industry Stabilizers

The Construction Industry Stabilization Commission, which is a splinter of the Wage Stabilization Board, has a new chairman, Duncan Campbell. He replaces Archibald Cox, who served most of the year 1952. The commission and its chairman are of special interest to the sheet metal industry, as they are to all the construction industry, because their determinations and conclusions had much to do with the relation between the industry and its employees the past year. They fix the scale of wages for an industry in an area. The board also announced Lawrence E. Seibel as a public member of the commission and as deputy chairman.

Mr. Campbell formerly was labor mediator in the

Public Works Administration, and before that in the Federal Works Agency. In those posts he established minimum wage schedules for nearly 3300 construction projects throughout the country. He has been in the State Department as an attache in South Asia; in the National Security Resources Board; labor relations advisor to the Secretary of the Interior; and he has been very actively helpful to a number of New Deal agencies.

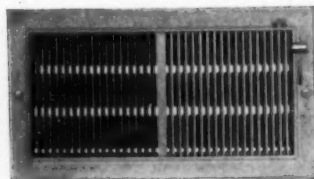
Mr. Seibel was an attorney in the Division of International Affairs in the Department of Labor, and he has had to do with Federal Mediation and Conciliation, Federal Foreign Funds Control, and a number of other New Deal agencies.

#### Hours and Earnings in Fabricated Metal

The Department of Labor recently issued an interesting tabulation on employment, hours and earnings in the manufacturing units of fabricated metal products. Under sheet metal work, establishments primarily engaged in manufacturing cornices, ventilators, skylights, gutters and other types of sheet metal work for buildings, and manufacturing sheet metal stove pipes, light tanks, bins, furnace casings, etc., are reported to have paid production and related workers an average of \$47.80 per week in 1947. The average jumped to \$56.02 in 1948, \$59.24 in 1949, and \$66.81 in 1950. The average of weekly work hours jumped from 40.1 in 1947 to 42.1 in 1950.

Some time before November 15 OPS will issue a special small business regulation which will exempt certain

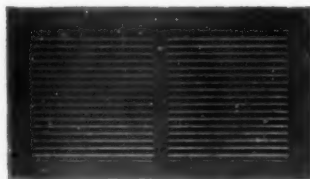
## A Complete Line for all Your Needs



No. 4432 register with flexible fins and multi-louvre valve.

Here are some improved and new designs in Auer registers, both for air conditioning and for perimeter systems. The Fig. DRP fabricated floor registers are ideal for perimeter jobs. They have adjustable cross bars. Fig. DRP 2 1/4 x 14 has single valve, and Fig. DRP has multi-louvres which can be set for desired volume and direction and locked in place by a balancing adjustment device. Made in proper sizes for perimeter heating requirements, with intakes to match.

Write for new Auer Register Book 52 on all models, also Bulletin on perforated grilles.



No. 7032 register with flexible fins and single valve.

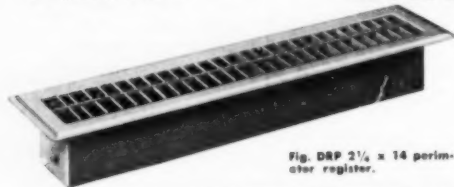


Fig. DRP 2 1/4 x 14 perimeter register.

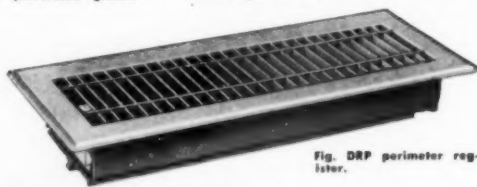


Fig. DRP perimeter register.

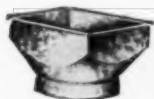
THE AUER REGISTER CO., 6600 CLEMENT Ave., Cleveland 5, Ohio.  
Canadian Distributor, Marchand Furnace, Ltd., Tilbury, Ont.

# Auer REGISTERS

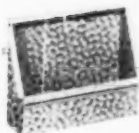
& GRILLES for AIR CONDITIONING & GRAVITY



No. 538  
Register Box



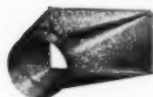
No. 5016  
Stack Head



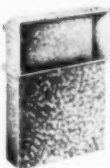
No. EP-3  
Round Takeoff  
Top Installation



No. EP-1  
Round Takeoff  
Side Installation



No. 5014  
Stack Head



No. 506-B  
Branch Tee



No. 506-R  
Radial Tee



No. PE1  
Register Takeoff  
Collar



PH2  
Register Tee



No. PH4  
Angle Register  
Box



No. PH3  
End Register  
Box



No. PH5  
Register  
Cap



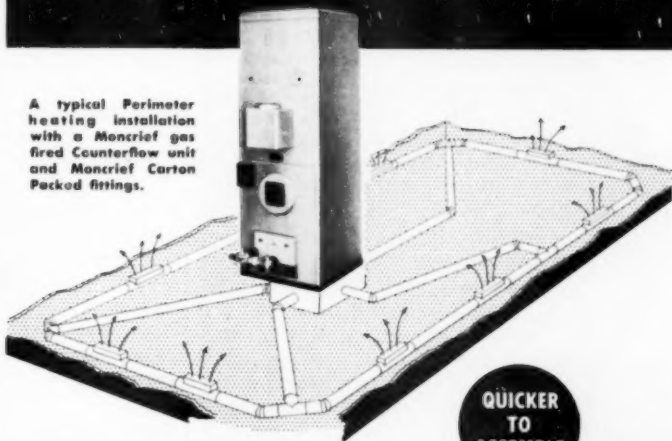
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A typical Perimeter heating installation with a Moncrief gas fired Counterflow unit and Moncrief Carton Packed fittings.



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TO  
ASSEMBLE

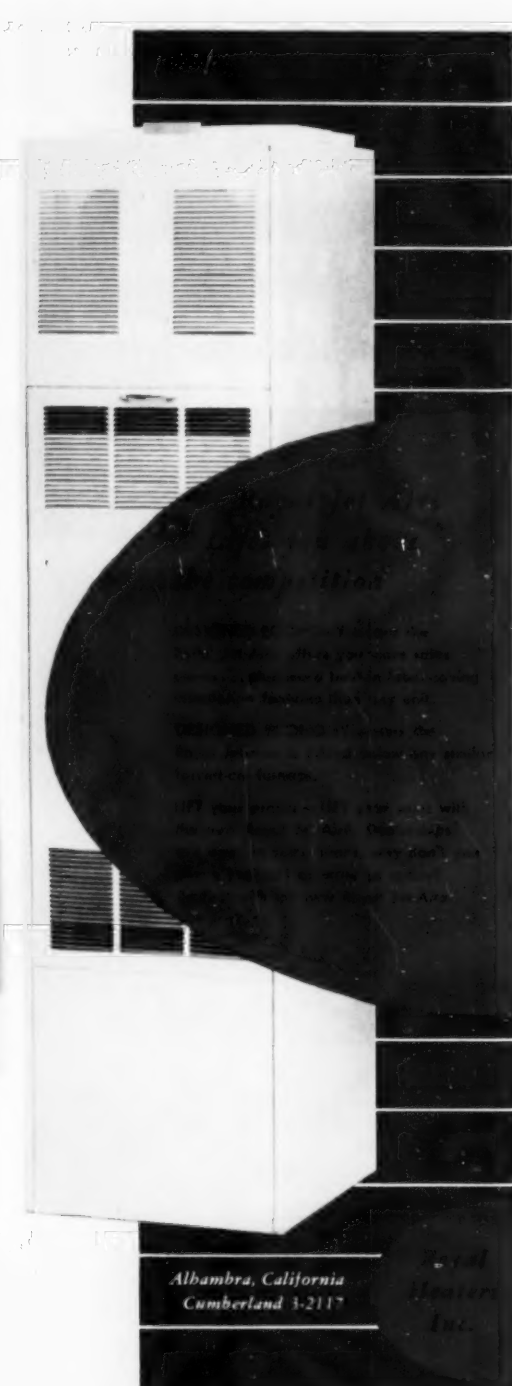
Carton Packed  
at No EASIER TO HANDLE Extra Cost  
to You! QUICKER TO INSTALL

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HEATING AND AIR CONDITIONING UNITS

MONCRIEF

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Alhambra, California  
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Royal Heaters Inc., manufacturers of the famous Royal Jet-Flow, Mid-Jet and Forced Flow heating units, America's most advanced gas heating equipment.

groups of establishments from controls and record-keeping on the basis of dollar volume of their business. It has been clear for a long time that an exemption of this kind will have no discernable effect on the general level of prices. Representative Wright Patman's Small Business Committee holds that "normal competition will be maintained at current or market price levels because it is expected that price regulations will continue to control the sales and service of the larger outfits".

#### VA Continues Appraisal

The Veterans Administration construction and appraisal operations are still delaying home loan guaranty proceedings. For a number of weeks now some 5000 homes under construction here in the District of Columbia have been at a standstill. Recently one of the officials proceeded to reinforce the housing staffs in various places. These staffs have been severely short of technically equipped men. In every place where this freeze has happened they are pushing through a project-by-project analysis of non-compliance items, such as deviations in plans, changes in specifications, and differences in minimum construction requirements. Such conditions have been discovered in projects. The Veterans Administration will try to get the builders, where there have been deviations, to correct whatever is not according to Hoyle. The Veterans Administration also has created review boards of architectural engineers to rule on builders' protests, based on interpretation of the building code. The review board also will determine what penalties shall be levied against builders unable, for various reasons, to correct defects. When deviations are found to be substantial, appraisal of the homes will be lowered. It is hoped the net result of all this will be to give veterans a little better house for what they have spent.

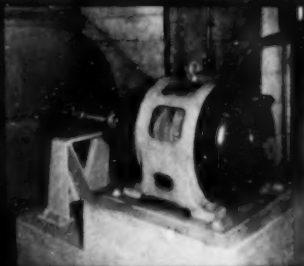
#### Relax Construction Controls

AS PART of its controls relaxation program, the National Production Authority is granting permission to use a DO rating to purchase operating equipment for the operation of schools and hospitals as well as for industrial plants.

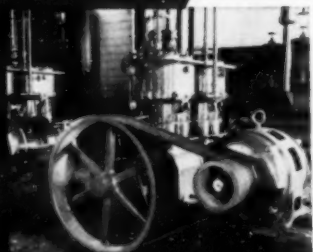
NPA stresses that under terms of the proposed Direction 8, added to Regulation 6, which it plans to issue shortly, purchase orders for the new self-certification quantities can be placed at any time, provided that they do not call for delivery before April 1, 1953.

NPA says that because of the loss of steel production during the steel strike, and the fact that military orders must be caught up by the end of December, it does not now seem feasible to put the relaxations into effect before the second quarter of 1953. However, NPA will review the materials supply situation later to see if an earlier date may be set.

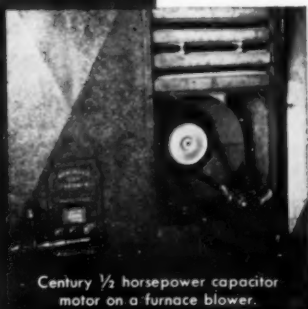
NPA is issuing the order now, although with an April 1, 1953, effective date, so that builders can do the preliminary planning for future construction and place advance orders with suppliers.



100 horsepower Century motor on a glass blowing machine.



Two 100 horsepower Century motors driving refrigeration compressors.



Century 1/2 horsepower capacitor motor on a furnace blower.



1/6 horsepower Century motor on a ventilating fan.

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The motor specifications—where skillfully selected—to assure the TOP PERFORMANCE and DEPENDABLE QUIET SERVICE that is built into each class of equipment.

Refrigeration compressors require one combination of operating characteristics and specifications—fans and blowers another combination—various types of heating equipment still another.

In over 50 years, Century has developed a wide line of types of motors with literally hundreds of specifications to choose from. It is easy to ENGINEER YOUR PRODUCT PERFORMANCE—THROUGH SKILLFUL MOTOR APPLICATION.

If you have motor service problems, phone or write to any of Century's 28 District offices regarding Century's national network of service stations—the motor exchange plan will serve you whether your motors are in or out of warranty.

Specify Century Motorized Equipment—get top equipment performance—dependable quiet service—keep your customers satisfied.

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*Floyd Wood, right, owner of Wood Heating and Sheet Metal Co., talking to Honeywell sales engineer Bill Ratchow*

## "Let's face it — one thermostat can't do the job today!"

says Floyd Wood of Kansas City

"Times have changed—and so has building.

"In the larger ranch or rambler-type home being built today, accurate heating and heating control in all parts of the house are necessary.

"You can't expect one thermostat to do this job any more. The houses are too spread out, with too much outside exposed area.

"With Zone Control you can maintain different temperatures in different parts of the house, according to use and occupancy. Wind, sun and exposure are compensated for.

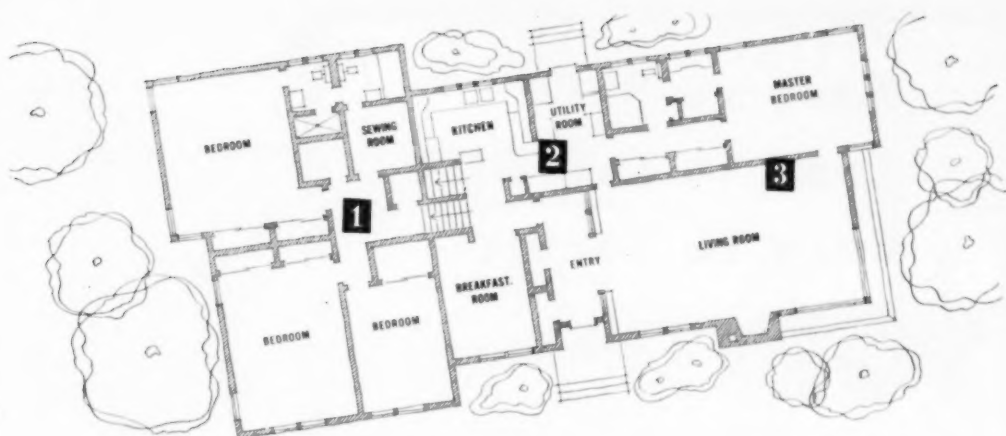
"There's economy in zoning a house, too. Customers do not have to maintain high temperatures in areas of the house where they are not needed.

"Honeywell Zone Control brings real comfort to our customers and real satisfaction to us for a job well done."

*7-room C. D. Jones residence in Johnson County, Kansas—the builder was J. C. Nichols Company and the plans were drawn by George Murphy, of Edwards-Tanner & Associates, Architects.*



*Another Plus-Profit  
Product from Honeywell*



## "Zone Control gives accurate control — to every part of the house"

"We've zoned every large house we've worked on since the war. It's the only practical, profitable thing to do today.

"The C. D. Jones residence here is one of our jobs—and it has become sort of a show place in these parts because of its perfectly ideal temperature control system. With Zone Control it was both

easy and economical to heat and *balance* the heat in this house.

"As the diagram above shows, I divided this house into three zones, using a Honeywell T921 Modulating Thermostat in each.

"Need I add the Jones family was well satisfied—like all Zone Control customers."

## Honeywell has controls for any type Zone Control job!



For complete information and application data on famous Honeywell Zone Control, call the Honeywell office nearest you. There are 96 of them located across the country. Or write Honeywell, Dept. AA-11-224, Minneapolis 8, Minn.

No matter what type heating system you have in mind, Honeywell can give you the *right* controls for the job. Here are a few typical Honeywell controls for zoning:

1. **Chronotherms**—famous, fully automatic Honeywell Electric Clock Thermostats, complete with automatic night set-back, automatic morning pick-up.
2. **Electronic Relays**—for performing the vital switching operations necessary.
3. **Outdoor Controls**—for measuring outdoor temperatures and raising or lowering the heat output accordingly.
4. **Modutrol Motors**—for controlling dampers or valve assemblies; they are operated directly by room thermostats.

# MINNEAPOLIS Honeywell



*First in Controls*



**Easy to Sell!**  
**Easy to Install!**  
**Easy to Service!**  
**TORIDHEET**

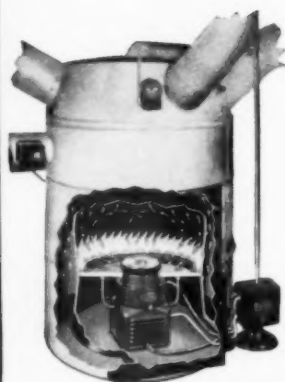


**The Pioneer rotary wall flame oil burner**

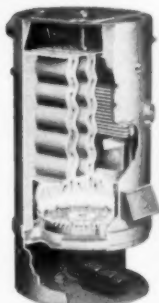
The customer-proved economy of TORIDHEET rotary wall flame equipment makes it your best bet for sales and satisfaction. TORIDHEET equipment sells easily and *stays sold*.

- Economical—saves up to 50% on oil
- Burns catalytic oil efficiently
- Quiet and clean
- Correct flame placement
- Fully automatic
- Trouble-free—one moving part
- Backed by 27 years of research and development

... For conversion jobs and in complete heating plants



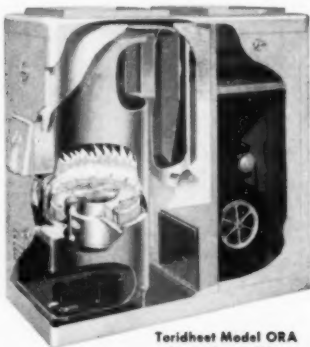
Toridheet Model F in warm air furnace



Toridheet Model ORU rotary fired boiler



Toridheet Model ORA-75 Hi-Boy winter air conditioner



Toridheet Model ORA winter air conditioner

Other Toridheet units for every need...every budget...Gun Burners...Gun Fired Boilers and Furnaces...Gas Conversion Burners and Gas Fired Furnaces

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# NIAGARA

## ANNOUNCES

New

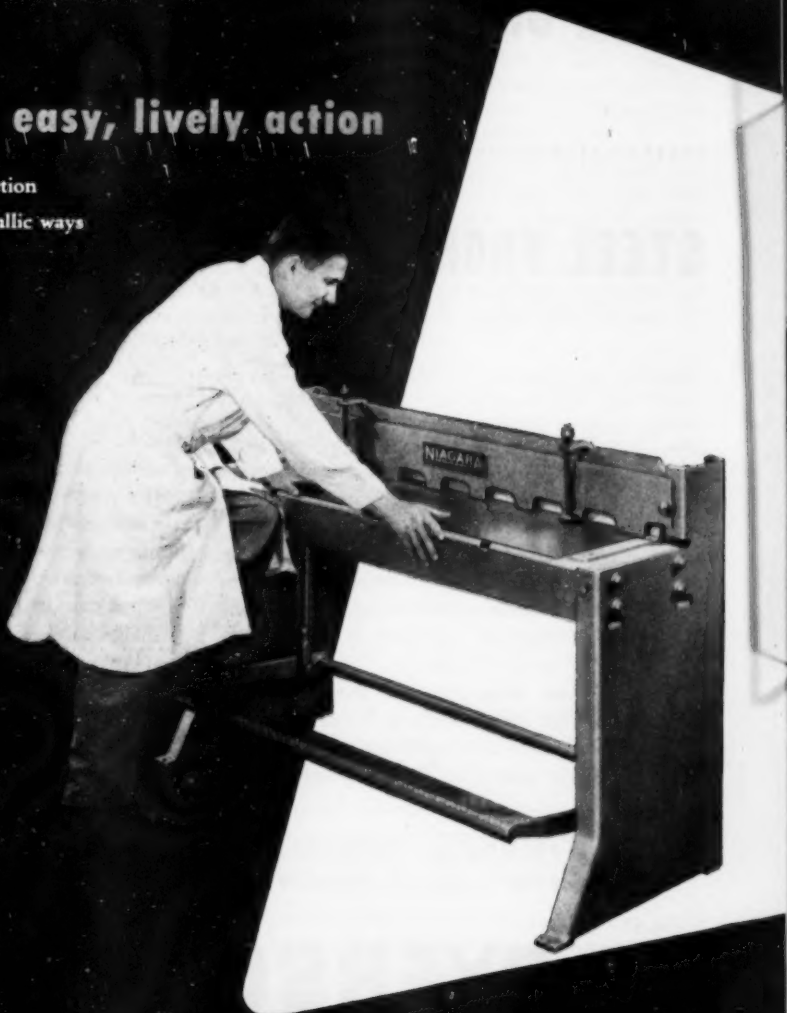
**Low Cost 48" Wide  
16 GAGE CAPACITY**

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**engineered for easy, lively action**

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- Adjustable laminated non-metallic ways
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- Modern, distinctive styling
- Clean accurate cuts
- Clear visibility of cutting line
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*It's a pleasure to operate*



*Write for Bulletin 80-F*

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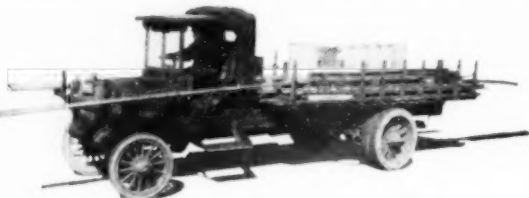
*America's Most Complete Line of Presses, Shears, Machines and Tools for Sheet Metal Work*

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The original Dobbins made their plodding rounds from a single small iron store. Today, their mechanized successors speed delivery from a network of fifteen huge steel-service plants.

And, while the first Ryerson wagon carried such products as saddle tree, horse shoe and boiler iron, today's giant trucks deliver an almost endless variety

of carbon, alloy and stainless steels.

The Ryerson sales representative, too, has changed with the times. Today he heads up a team of specialists who are ready and able to help you on every problem relating to steel from stock.

While current demand may deplete supplies of some sizes, our over-all stocks are large and complete. And you can always count on the same friendly will to help that steel buyers have found at Ryerson for 110 years.

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STEELS...BARS, STRUCTURALS, PLATES, SHEETS, TUBING, ETC.**

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# AMERICAN ARTISAN

*editorial*

## "Together We Stand"

THERE IS MUCH TRUTH in the old saying "Together we stand, divided we fall". It applies to all groups who must face common problems. The sheet metal and heating contractors are the only segment of the construction industry that has failed to organize itself on a complete national basis. There are of course the local and state organizations and the Sheet Metal Contractors' National Association, but these groups are not integrated from the local level through the state and up to the national association, as are groups in many successful construction associations.

Our industry is discovering that there are no really local problems — that solutions to such problems are possible only if the experience in other areas is known and used. Contractors must gather broad information relating to these problems, and prepare it in an effective manner, in order to gain recognition and aid from officials and organizations in a position to help. Solutions call for hard work on the part of many contractors with wide experience and with ability to see beyond local implications of unsatisfactory situations that may be just beginning to develop.

An example of what can happen when sheet metal contractors join in a common objective is illustrated by the work done by the Minnesota and Connecticut associations when they placed the Sheet Metal Contractors' National Association's Code of Trade Practice for Ventilating and Air Conditioning Work in the hands of engineers and architects and requested that they prepare separate specifications for sheet metal contracting work.

Another example of contractors working together is the action being taken in Illinois, California, and Arkansas where "sub-contractor laws" are in effect or being requested under which bids of sub-contractors must be published along with the general contractor's bid as a means of eliminating unfair general contractor bid shopping.

The Sheet Metal Contractors' National Association has prepared a warm air heating code and a suggested licensing ordinance that is being used by many local associations to promote a better standard for heating installations. It takes coordination of effort to compose such a code and without the advice of contractors throughout the nation, such a code would be valueless.

The National Warm Air Heating and Air Conditioning Association and the Sheet Metal Contractors' National Association have joined, because of their common interests, to present to the National Board of Fire Underwriters and National Fire Protection Association a proposal to revise their regulation covering warm air heating and ventilation work as set forth in the National Board of Fire Underwriters' pamphlet No. 90 to coincide with today's practice.

There are many advantages of belonging to an active association whose sole interest is the improvement and development of the warm air heating, air conditioning and sheet metal industry. It would seem desirable that such an association be organized not only on a national basis but with state and local coordination, as has proven so effective in other branches of the construction industry.

# How To Estimate Cooling Load

## ... for residential air conditioning

The air conditioning contractor has the responsibility for recommending the proper size equipment in any installation. To do this, he must estimate the cooling load of the building involved. Discussed here are the various components of the load — what they are, and how much they contribute — along with the advantages and limitations of some short cuts which the contractor may use in his calculations.

AIR CONDITIONING CONTRACTORS have a responsibility with regard to the sale of their products, in that the general public depends upon them to recommend equipment of the proper size. Unlike some other major household appliances, air conditioning units cannot be selected arbitrarily. For correct application, there must be an estimation of the cooling requirements of the building. There are certain fundamentals which will help the contractor make this estimate.

In certain respects a cooling load estimate is similar to a heating load estimate. Each type of load is built up by evaluating the contribution of each of the various components of the load. The heating load, for instance, consists of the following considerations:

1. Heat loss through building construction including walls, windows, floor, and roof by reason of a temperature difference between the heated space and the outside air.
2. Heat required to raise the temperature of the fresh air supply. This air may be introduced positively with a fan or it may enter by infiltration through cracks, or both.
3. Heat required to evaporate water if used for humidification.

Fairly reliable heating load calculations are relatively simple to make and require little judgment. This is because, first, heat loss through building construction usually represents the major portion of the load, and second, the temperature difference between the heated space and the outside which causes the heat loss usually is of long enough duration to allow a fairly steady rate of heat transfer to occur.

In contrast to the simplicity of the heating load calculation, the cooling load calculation, if made conscientiously, can be quite complex. Fortunately, experience has shown the way to short cuts. No short cut methods, how-

ever, can be applied properly unless one has a general acquaintance with their derivations and their limitations. It is the intent of the discussion which follows to present first some of the underlying fundamentals of cooling load calculations and then to point out what short cuts are available for practical use.

### Cooling Load Involves Many Factors

An outline of the various factors contributing to the cooling load is given below:

#### *I. Sensible heat gain (heat which causes a rise in temperature.)*

##### *A. Heat which enters a building from the outside.*

1. Heat which flows through walls, windows, floors, and roofs by reason of the temperature difference between the conditioned space and the outside air.
2. Heat which flows through walls, windows, and roofs by reason of the temperature potential created by solar radiation.
3. Heat which is contained in the supply of outside or fresh air by virtue of its temperature, which is higher than that of the conditioned space. This air may be introduced positively with a fan or it may enter by infiltration, or both.

##### *B. Heat which originates inside of a building.*

1. Heat which is given off by the human body.
2. Heat which is given off by appliances such as electric lights, motors, stoves, water heaters, etc.

#### *II. Latent heat gain (heat represented by an increase in water vapor.)*

##### *A. Vapor which enters a building as part of the fresh air supply.*

##### *B. Vapor which originates inside of the building.*

1. Vapor which is given off by the human body.
2. Vapor which is produced by certain processes such as cooking.

As explained, the heating load is relatively simple to analyze because of the steady nature of its principal component. The cooling load, on the contrary, has a characteristically variable nature. It is not possible to select any principal component of a cooling load without reference to a particular job. Indeed, it is frequently found that what may be the principal component at a certain hour of the day may not be the principal component at some other hour. In a restaurant, for instance, the major heat load in the morning and early afternoon may be coming from the patrons. In the late afternoon, the people load may give way in importance to the sun



load as the effects of daytime radiation are finally felt on the inside of the building.

The calculation of a cooling load requires the exercise of care in determining the time of day at which the maximum sum of all the contributing components is reached. Each heat source component will reach a peak sometime during the day. It would usually not be correct to total the peaks, for in all likelihood they will not occur simultaneously. Unless one can rely on his experience, it is wise to make several calculations based on various hours during the day. Each contributing heat source component should be assigned only such portion of its peak value as it actually contributes at the time for which the calculation is made. The effect of the radiant sun load, for instance, although it reaches a peak intensity on the outside of a building about noon, may not, because of the heat absorbing characteristics of the building, reach its peak effect on the load until sometime later in the afternoon, perhaps about 4:00 p. m.

### Must Get Data Before Calculating

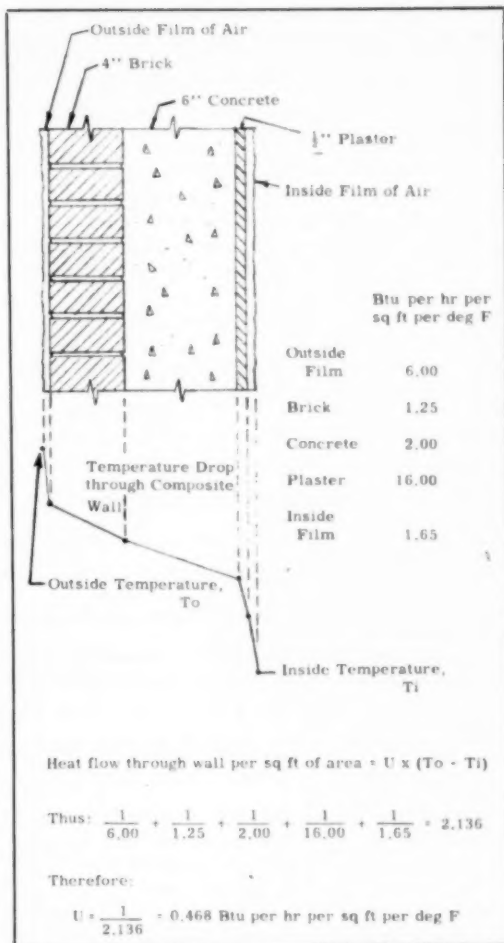
The first step in making a cooling load estimate is to decide upon what inside and outside temperatures the estimate shall be based. In addition to the dry bulb temperatures used in heating, the cooling load also requires that inside and outside wet bulb temperatures be specified. These four temperatures comprise what are known technically as design conditions. The design conditions chosen may be almost any reasonable combination, but they usually represent conditions near the maximum which it is expected will occur for any extended period. Inside design temperatures are usually taken as 80 F db and 50 per cent rh (about 67 F wb). Outside design temperatures vary from one locality to another and are therefore usually selected from tables derived from weather records such as appear in the ASHVE Guide.

In addition to design conditions, certain other factors must be assumed before proceeding with the cooling load estimate. One of these is the number of people and their class of activity. The human body produces heat at rates varying from 390 Btu per hr for a seated person at rest to 1500 Btu per hr for a man doing heavy work. Studies have been made to establish not only the total heat output of the body but also the portion which is sensible heat and the portion which is latent heat (heat given off in the form of water vapor).

### Fresh Air Another Factor

Another factor to be assumed is the amount of fresh air that it is expected will be required. Tests confirmed by practical experience have led to certain industry recognized ventilation standards. Of course, local ordinances often dictate minimum fresh air quantities, but recognized standards specify for commercial establishments anywhere from 7½ cfm per person for no smoking to 40 cfm per person where heavy smoking is expected.

In residential work it is frequently not necessary to



THE METHOD used in calculating the U factor for this wall applies to any type of composite construction

bring in a positive supply of fresh air, since infiltration will take care of requirements. For calculation purposes one air change per hour is used.

A final pre-calculation requirement is data on the area or building to be cooled. This should include the compass direction of each wall; wall, door, window, ceiling, and floor areas; and wall, floor, and roof construction. On certain jobs possible shading effects of adjoining structures, trees, etc., should be noted.

### Evaluating the U Factor

Having made necessary assumptions and assembled all the basic information concerning the building to be cooled, we are now ready to examine the actual procedure of evaluating each component of the cooling load. Referring back to the outline of these components, we find first the heat which enters the building by reason

of the inside-outside temperature difference. The basic equation for this type of heat flow is:

$$Q = UA(T_o - T_i)$$

where  $Q$  = Btu per hr;  $U$  = Btu per hr per sq ft per deg F;  $A$  = sq ft;  $T_o$  = outside temperature; and  $T_i$  = inside temperature.

In the equation above, the all important factor is  $U$ , commonly known as the over-all coefficient of heat transfer. A discussion of this factor alone could easily form the subject for several articles. For our purposes here, however, we are interested only in a basic understanding of what  $U$  means. The following example will show how a  $U$  value is built up.

Assume, as shown in the diagram, that we have a wall built up from outside to inside of brick 4 in. thick, 6 in. thick concrete, and plaster  $\frac{1}{2}$  in. thick. Assume an outside wind velocity of 15 mph or less. From our data on the conductivity of these substances (such as given by the ASHVE Guide) we can find the following:

Conductivity of brick, 5.00 Btu per hr per sq ft per deg F per in. of thickness.

Conductivity of plaster, 8.00 Btu per hr per sq ft per deg F per in. of thickness.

Conductivity of concrete, 12.00 Btu per hr per sq ft per deg F per in. of thickness.

Conductance of air film on inside wall surface, 1.65 Btu per hr per sq ft per deg F.

Conductance of air film on outside wall surface, 6.00 Btu per hr per sq ft per deg F.

Since the materials in our wall vary from the 1 in. thickness of the values given, we must correct as follows:

Conductivity of 4 in. brick,  $5/4 = 1.25$  Btu per hr per sq ft per deg F.

Conductivity of 6 in. concrete,  $12/6 = 2.0$  Btu per hr per sq ft per deg F.

Conductivity of  $\frac{1}{2}$  in. plaster,  $8/0.5 = 16$  Btu per hr per sq ft per deg F.

These various component values of the  $U$  factor for the wall must be added in the reciprocal. (For mathematical reasons it is not necessary to explain here. See any heat transfer text or the ASHVE Guide).

Thus,

$$1/6.0 + 1/1.25 + 1/2.0 + 1/16.0 + 1/1.65 = 2.136$$

Therefore,

$$U = 1/2.136 = 0.468 \text{ Btu per hr per sq ft per deg F for the composite wall}$$

The example given is very simple, but in principle it applies to any type of composite construction. The  $U$  value for almost any combination of building materials may be derived from basic heat transfer data on the materials.

### Many Variables Affect Solar Heat

The second component of heat gain listed in the previous outline is heat flow caused by the heating of certain outside surfaces exposed to the direct and indirect radiation of the sun. The amount of heat assignable to this source is very difficult to evaluate. Tables are available in the ASHVE Guide and other texts giving suggested values to use. Some of the variables considered in the calculation of solar heat are as follows:

1. Intensity of radiation (varying with time of day, direction of surface, season of year, and latitude).

2. Thermal characteristics of substance heated by radiation (Heavy walls or floors will cause a time lag in the effect of radiation due to their ability to absorb a great deal of it before giving it up to air.)

3. Absorption characteristics of surfaces receiving radiation (Light colored walls and roofs will reflect a good portion of the radiation whereas dark colored surfaces will absorb it with a temperature rise).

4. Shading used (especially in case of windows).

The third factor in sensible heat gain is the heat brought in by fresh air. This is a simple calculation involving the lb per hr of entering air  $\times$  the specific heat of air  $\times$  the temperature difference between the outside air and the conditioned space.

The fourth factor in the outline is heat given off by the human body. As mentioned previously, experiments have established values for various classes of activity. Values may be looked up in the ASHVE Guide or other air conditioning texts.

The fifth factor, appliance heat, is generally a matter of gas or electrical energy input to the device. Tables are available for convenient selection of values. Electric lights constitute one of the heaviest heat sources of this type. In evaluating the overall effect of this type of heat source, care should be taken to make sure just what lights or appliances are likely to be in use at the time for which the load estimate is made. It is quite possible that only part of the appliances will be used at any one time.

### Must Consider Latent Heat Sources

Let us consider now the latent heat sources in the outline. (Latent heat is heat in the form of water vapor which must be condensed to water by the air conditioner before it can be removed from the air). The amount of latent heat in the outside or fresh air used can be evaluated by use of a psychrometric chart which shows the grains of moisture per lb of air. The change in grains per lb is found on the chart for the air as it is cooled from outside conditions to the conditions of the cooled space. Latent heat is then calculated as follows:

$$\text{Btu per hr} = \text{lb of outside air per hr} \times (1080/7000) \times \text{grains moisture removed per lb of air}$$

Vapor given off by the human body in certain loads such as in restaurants or theaters is an important factor. Like the sensible heat given off by the body, latent heat has been tabulated according to activity and may be found in the ASHVE Guide.

Vapor originating from certain processes has been evaluated and like that produced by the body may be found in standard references on air conditioning.

It was the intention of the preceding discussion to develop a general view of the background for cooling load estimation. What has been said so far cannot often be used in the everyday problems of an air conditioning contractor. He should have a general knowledge of the technical points touched upon, but he will not have the time required for a detailed analysis of each and every job.

**COOLING LOAD CALCULATION FORM**  
For Comfort Air Conditioning

ITEM	Net Sq Ft of Surface	FACTORS			COOLING UNITS Btu/Hour	
					Latent Heat	Sensible Heat
1. Windows, Sunlit: Inside Venetian Blinds or Shades	*	<u>Latitude</u>				
<u>Exposure</u> <u>Sun Time</u>		<u>30°</u>	<u>40°</u>	<u>50°</u>		
East              8 AM		90	90	90		
Southeast        9 AM		70	70	80		
South             Noon		60	60	80		
Southwest       3 PM		90	90	100		
West              4 PM		110	110	110		
Northwest       5 PM		85	85	80		
Skylights		150	150	150		
Windows, North or Shaded:		<u>Room Dry Bulb</u>				
		<u>78 F</u>	<u>80 F</u>			
At outside dry bulb of 90 F		14	11			
95 F		19	17			
* Use sash area.              100 F		25	23			
2. Walls						
(a) Sunlit		4.5				
(b) Shaded		3				
(c) Interior						
Adjacent unconditioned		3				
areas						
Adjacent ground		0				
3. Roof or Ceiling under						
Flat Roof		<u>No</u>		<u>Under</u>		
<u>Uninsulated</u>		<u>Ceiling</u>	<u>Ceiling</u>	<u>Attic</u>		
Frame or heavy masonry		18	16	14		
Light masonry		28	24	20		
<u>Insulated</u> , any construction		12	10	10		
Ceiling under Finished Room		3.6				
4. Floors, over:						
Finished Rooms		3.6				
Basement		3.0				
Ground		0				
5. Lights                      Watts		3.4				
6. Motors: HP (Factor for 75% efficiency) Watts		3393 3.4				
7. Appliances	No. Units	<u>Latent</u>		<u>Sensible</u>		
8. People						
9. Infiltration                      CFM (See Item 11 for factor.)						
10. Total Cooling Units, Internal (Sum of Items 1 through 9)						
11. Ventilation *                      CFM		<u>Latent Factor at</u> <u>Outside WB</u>				<u>Sen-</u> <u>sible</u> <u>Factor</u>
outside dry bulb of    90 F		<u>70 F</u>	<u>75 F</u>	<u>78 F</u>	<u>80 F</u>	
95 F		9.52	13.8	25.5	20.4	12.30
Inside Design Conditions				28.6	28.6	15.0
		78 F	80 F	80 F	80 F	19.9
		45 °C	50 °C	50 °C	50 °C	
12. Total Cooling Units (Sum of Items 10 and 11)						

\* For factors to use in item 11 refer to table on ventilation and infiltration

Copyrighted cooling load estimating form and table on next page courtesy of Air Conditioning and Refrigerating Machinery Association, Inc., from ACRMA Application Engineering Standards for Air Conditioning for Comfort

As a consequence of the need for a practical, short-cut approach to the problem of making cooling estimates, certain short-form analysis sheets have been developed and used successfully. Various manufacturers have designed their own forms. One of these appeared recently in the August 1952 issue of *American Artisan*. In addition to the individual forms used, the air conditioning industry, as represented by leading manufacturers who belong to the Air Conditioning and Refrigerating Machinery Association (ACRMA), has agreed upon and published a pamphlet of standard practices using industry recognized factors for making cooling estimates. This standard is known as the *Application Engineering Standards For Air Conditioning For Comfort*. It includes a suggested form for working up the estimate as well as factors to use for the usual jobs. All material is based upon basic data as presented in the ASHVE Guide.

The so-called short-form analysis sheets described above were designed to permit load estimates to be made quickly and with sufficient accuracy for residential and commercial installations. These installations often involve packaged-type equipment where all that is required of the cooling estimate is that it provide a guide in the choice between two sizes.

#### Heat Leakage Important in Residences

The short-form type of calculation does not require the rather tedious putting together of  $U$  values. Rather, it provides empirical factors based upon the most commonly used types of construction in walls and roofs. It was designed primarily for commercial-type jobs such as small stores, restaurants, etc., where the internal heat produced by patrons, appliances, and processes, and the cooling of the required ventilation air usually constitute the major portion of the load. When this is true, a considerable error in the heat leakage calculation can be tolerated since it has a relatively small effect on the total load.

In residences the internal load and ventilation requirements are relatively unimportant as compared with the

effect of heat leakage through the walls, windows, and roof. For this reason considerably more attention should be focused on the heat leakage calculation. Intensive studies on residential heat load calculation are presently underway to arrive at more reliable methods.

It is not possible to generalize at this time on universal factors for residential load calculation. Each local contractor, however, can build up experience factors if he makes a conscientious effort to do so. It is entirely possible in a given area for a given type of construction to simplify cooling load estimation to the point where it is directly related to floor area.

#### Base Estimate on Carefully Chosen Time

The cooling load estimate when completed will show separately how much sensible heat and how much latent heat it is expected will have to be removed from a building in order to hold certain inside design conditions when certain outside design conditions exist. It should not be forgotten that the estimate is based upon an instantaneous combination of a number of sources of heat and that these sources have been evaluated for the effect that each contributes toward the total amount of heat at the instant chosen for the calculation. At some other instant during the day a different combination of sources of heat may produce a total cooling requirement greater than that calculated. It is important, therefore, to choose with care the time upon which the calculation is based. It is also important to remember that outside design conditions occur for relatively short portions of the total cooling season and, therefore, the equipment chosen will be capable of producing lower-than-design conditions inside—usually something desired, since 80 F db and 67 wb (the most frequently used inside design conditions) are in the upper limits of the comfort zone.

The sensible and latent cooling requirements of a building as calculated are used to balance against the sensible and latent cooling capacities of air conditioners. These values may be expressed in terms of Btu per hr or in terms of tons of cooling.

### VENTILATION AND INFILTRATION

VENTILATION REQUIREMENTS			INFILTRATION
Smoking	No. of Occupants	CFM	
None	$\times 7\frac{1}{2} =$		(H) = Room Height, (L) = Length, (W) = Width, (G) = Wall Factor
Light	$\times 15 =$		Room with one outside wall, (G) = 1 Two outside walls, (G) = 1.5 Three or more outside walls, (G) = 2
Heavy	$\times 40 =$		CFM = $\frac{(H) \dots \times (L) \dots \times (W) \dots \times (G) \dots}{60} =$

# Warm Air Front Moves Forward

## ... at 39th National Warm Air Convention

**The coming annual convention of the National Warm Air Heating and Air Conditioning Association is designed to give those in the industry practical help in sales promotion and in solving many other common problems. The theme will be cooperation within the industry and good relations between the industry and the public. Those attending will also be brought up to date on current research in the field, which opens the way to new developments**

HELPFUL INFORMATION and entertainment for all those connected with the warm air heating industry will be offered at the coming two-day 39th annual convention of the National Warm Air Heating and Air Conditioning Association, which will be held on December 3 and 4 at the Sheraton-Gibson Hotel, in Cincinnati. A number of qualified speakers will discuss such subjects as marketing opportunities in summer air conditioning, selling and sales promotion in the warm air heating industry, the future of home building and its relation to warm air heating, small pipe systems, and similar topics.

A report on the field and laboratory tests conducted since the last convention will show that the warm air heating industry has moved forward in its aim to bring to the public real indoor comfort. Both heating and cooling will be reported upon, and the plans for next year will be outlined — plans to further the constant objective of better service to the owner of warm air heating equipment.

The first session will strike the keynote for the convention, with its emphasis on two main themes — the need for cooperation and mutual understanding within the industry, and the necessity for good sales promotion and advertising to insure good relations between the industry and the public. In his opening address, the president of the association, W. D. Redrup, will stress developments within the association, which is itself a symbol of industry cooperative effort. Continuing along these lines, Fred R. Green, president of the National Heating Wholesalers' Association, will talk on the "Mutual Problems of Manufacturers, Wholesalers and Dealers." Sales

promotion and salesmanship will be covered by Jack Stowell, Aurora, Ill., and Floyd M. Feder, Cleveland.

### Practical Help Offered

Practical help in solving some of the "mutual problems" of the industry will be offered in the afternoon session, during which open end mortgages will be discussed by Arthur Goldman, New York, as one of the most effective sales tools at the disposal of the dealer. Also of practical interest will be the presentation of the results of a survey on small pipe systems, to be presented by D. Paul Bailey, chairman of the association's market research committee. Sales personality and publicity will again be emphasized in the afternoon session, with a talk by Fred Smith, vice president, Powell Valve Co. One of the most interesting features of the convention will be a presentation by the publicity and merchandising committee, at the first afternoon session, on the work that is being done in consumer and trade publicity. This presentation will show how the publicity department of the association has materially increased acceptance by the public for warm air heating. It will also point out that more publicity on the part of the entire industry is a "must" for the coming year. Six executives, including M. I. Levy, L. S. Redford, J. E. Phillips, Vearl Heinis, I. E. Seith, and H. C. Gurney will lead this discussion.

At the second morning session, committees will report on their progress, carrying out the theme of the first session, development within the industry. Reports will be given on the activities of the membership committee (an important indication of the state of industry cooperation), the task group committee, and committees on industrial and commercial heating, research, field investigation, education, the short course, indoor comfort conference, and committees for the manuals put out by the association.

### Research Will Be Stressed

The last session of the convention will, appropriately, look to the future by emphasizing basic research, the only assurance of progress and new development. Progress reports of the various investigations being conducted at the University of Illinois will be presented by University personnel. These reports will include the





SPEAKERS INCLUDE: 1. G. W. Denges, Williamson Heater Co.; 2. N. T. Hess, Vorys Bros.; 3. F. L. Meyer, Meyer Furnace Co.; 4. W. D. Redrup, Majestic Co.; 5. R. W. Roose, U. of Ill.; 6. A. E. Brockbank, Natl. Assn. of Home Builders; 7. W. F. Brundage, Brundage Co.; 8. F. Smith, Powell Valve Co.; 9. C. W. Nessell, Minneapolis-Honeywell; 10. G. A. Voorhees, Natl. Warm Air Htg. and Air Cond. Assn.; 11. Fred Green, Des Moines Furnace & Stove Repair Co.; 12. M. I. Levy, Viking Air Conditioning Corp.; 13. B. F. McLouth, The Sales Engineers; 14. C. L. Grandstaff, C. A. Olsen Mfg. Co.; 15. D. Paul Bailey, Iron Fireman Mfg. Co.; 16. C. L. Sapp, Farquhar Furnace Co.; 17. W. C. DeRoo, Hart & Cooley Mfg. Co.; 18. Dean L. G. Miller, Michigan State College

results of the investigation of summer cooling in Research Residence No. 2 and the small pipe system which has also been installed in the residence.

On the entertainment docket, a luncheon has been scheduled for each day and a cocktail party will be given following the business meetings of the first day. These have been planned by the entertainment committee under the leadership of G. W. Denges.

All those connected with the warm air heating industry

are invited by the association to attend the convention, which is intended to provide an opportunity for them to get together and discuss mutual problems and goals. There is no registration charge for members of the association. Registration fees for non-members are as follows: manufacturer representatives, \$15.00; wholesaler representatives, \$10.00; and dealer representatives, \$5.00. The association urges early reservations. These can be made by writing the Sheraton-Gibson Hotel.

## Program

### 39th Annual Convention

#### National Warm Air Heating and Air Conditioning Association

#### Sheraton-Gibson Hotel

#### Cincinnati, Ohio

#### Wednesday, December 3, 1952

REGISTRATION—8:30-9:45 a.m., Roof Garden

MORNING SESSION—9:45 a.m., Roof Garden

Presiding

W. D. Redrup, The Majestic Co.; president, National Warm Air Heating and Air Conditioning Association

*Welcome to Cincinnati*

W. L. McGrath, The Williamson Heater Co.

President's Opening Address

W. D. Redrup

*Sales Promotion by an Outstanding Dealer*

Jack Stowell, Aurora, Ill.

*Mutual Problems of Manufacturers, Wholesalers and Dealers*

Fred R. Green, Des Moines Furnace & Stove Repair Co.; president, National Heating Wholesalers' Association

*A Cruise on the U.S.S. SalesmanShip*

Floyd M. Feder, Reliance Life Insurance Co.

ADJOURNMENT

LUNCHEON SESSION—12:30 p.m., Roof Garden

Guest Speaker: Frank H. Adams, Surface Combustion Corp.

AFTERNOON SESSION—2:30 p.m., Roof Garden

Presiding

C. B. Phillips, Surface Combustion Corp.; first vice president, National Warm Air Heating and Air Conditioning Association  
Nomination and Election of Officers and Members of the Board of Trustees

*Sales Personality—Its Importance and Development*

Fred Smith, Powell Valve Co.

*Open End Mortgages and Year Round Air Conditioning*

Arthur Goldman, Magazine of Building

*Results of Small Pipe System Survey*

D. Paul Bailey, Iron Fireman Mfg. Co.; chairman, market research committee, National Warm Air Heating and Air Conditioning Association

*Warm Air Publicity—Its Effects!*

M. I. Levy, Viking Air Conditioning Corp.; L. S. Redford, Jackson & Church Co.; J. E. Phillips, Stelwagon Mfg. Co.; Vearl Hejnis, Rheem Mfg. Co.; I. E. Seith, Forest City Foundries Co.; H. C. Gurney, Surface Combustion Corp.

ADJOURNMENT

COCKTAIL HOUR—5:30 p.m., Ballroom (admission by ticket)

#### Thursday, December 4, 1952

REGISTRATION—8:30-9:30 a.m., Roof Garden

MORNING SESSION—10:00 a.m., Roof Garden

Presiding

G. W. Denges, The Williamson Heater Co.; second vice president, National Warm Air Heating and Air Conditioning Association

Committee Chairmen's Reports on Association Activities

Membership Committee: G. W. Denges, The Williamson Heater Co.

Task Group Committee: T. I. Byrd, The Lau Blower Co.

Industrial & Commercial Heating Committee: R. C. Jaye, Syncromatic Corp.

Research Advisory Committee: F. L. Meyer, The Meyer Furnace Co.

Field Investigation Committee: C. W. Nessell, Minneapolis-Honeywell Regulator Co.

Legislative Committee: C. L. Sapp, Farquhar Furnace Co.

Educational Advisory Board: Dean L. G. Miller, Michigan State College

Manuals 1, 2, 3, 5, and 8 Committee: E. B. Root, Superior Safety Furnace Pipe Co.

Manual 4 Committee: Wm. C. DeRoo, Hart & Cooley Mfg. Co.

Manuals 6, 7 and 7A Committee: F. W. Brundage, The Brundage Co.

Manual 9 Committee: Ross Wallis, Meyer Heating and Sheet Metal

Manual 10 Committee: C. L. Grandstaff, The C. A. Olsen Mfg. Co.

Short Course Committee: B. F. McLouth, The Sales Engineers

Indoor Comfort Conference Committee: Newt T. Hess, Vorys Bros., Inc.; G. A. Voorhees, technical secretary, National Warm Air Heating and Air Conditioning Association

ADJOURNMENT

LUNCHEON SESSION—12:30 p.m., Roof Garden

Guest Speaker: Alan E. Brockbank, president, National Association of Home Builders

AFTERNOON SESSION—2:30 p.m., Roof Garden

Presiding

F. L. Meyer, Meyer Furnace Co.

*Small Pipe Heating in Research Residence No. 2 (Questions and Answers)*

R. W. Roose, University of Illinois

*Comparison of Perimeter-Loop System and Radial System in Research Residence No. 3 (Questions and Answers)*

H. T. Gilkey, University of Illinois

*Summer Cooling in Research Residence No. 2 in 1952 (Questions and Answers)*

Donald R. Bahnfleth, University of Illinois

CONVENTION ADJOURNMENT

# Before You Bid —

## How Can You Know What the Job Will Cost?

N. J. Biddle

Secretary, Michigan Heating and Sheet Metal Association

**Why do contractors sometimes take on jobs that eventually "net them a loss?" The author says it's due to a lack of an accurate job cost estimate before the bid. In this second of a series of articles, different methods for determining two main job cost factors — material and labor — are discussed**

ONE OF THE first and most troublesome problems which besets the contractor is trying to determine the asking price for his jobs. Obviously, to make money, he must be able to secure jobs at prices which will pay out something more than he has to put into them.

No asking price can be set until the cost is known within reasonably close limits. No good businessman will attempt to set a selling price for a job to be done in the future until he has determined to the best of his ability what that job is going to cost him when completely installed. The same holds true for sheet metal items manufactured in his shop and sold as finished products or assembly parts.

Why is it that contractors take work at a loss? There are two main reasons. First, they may, in estimating job costs, make factual errors. They may, through carelessness, underestimate some quantities, leave out items, etc. Second, they may use an improper method in arriving at the price. (There are several other less prevalent reasons for loss, such as customers who can't or won't pay, etc., but the two causes mentioned account for the bulk of loss incurred each year).

### "Guesstimating" is Hazardous

What, then, are some of the estimating methods which you should avoid? Most of us know contractors who claim they can look at a prospective job, or the plans for one, and without further ado, tell just what the job will cost to complete and what it should be sold for.

Our answer to that is — it just isn't so! No one is experienced enough to foretell the exact cost of a future job in this manner.

In heating and some other phases of sheet metal, a very large number of contractors take their jobs on a so much per outlet basis or some other unit basis. Many other contractors figure their jobs on a per pound basis, either with or without allowance for the complexity of the installation or other job conditions which affect cost.

If time permitted, we could demonstrate that none of these methods will give sufficiently accurate detailed information with which to properly compute a cost or on which to base a selling price. Such methods are not sufficiently flexible to allow for properly figuring a wide range of work. They may reasonably suffice where a firm has a limited range and type of work but even then are exceedingly hazardous unless complete and accurate cost records are kept on all jobs and constantly compared with the estimates. No bid should be submitted until a careful survey has been made.



In a tight competitive market, it becomes increasingly necessary for a contractor to know, as closely as is humanly possible, just where the break-even point lies. All jobs taken below this point will result in a loss.

In any competitive area, if sales ability and productive efficiency are substantially equal, the firm which does the best job of predetermining costs will have a tremendous competitive advantage over the others and will undoubtedly show the best earning record through the years.

All losses, no matter from what source, are a charge

against net earnings of a business during the period they were accrued or applied. These losses must be made up somehow, for any firm desiring to stay in business must average some profit. There can be no profit until any losses are made up. The net result is that any loss is translatable into a certain volume of work which must be done without profit.

To see what effect such losses may have, let's take the case of a contractor who did 50 jobs in 1951, which gave him a volume of \$75,000. He made an average profit of 10 per cent, or, \$7,500. However, he lost approximately \$1,500 on ten of his jobs, which took the profit from a number of his other jobs.

Let's look at the score. The profit from 40 jobs was sufficient to absorb a loss of \$1,500, and still pay a net profit of \$7,500, or a total profit of 15 per cent, or, \$9,000.

That is what he would have netted if he had not taken those ten sour jobs. He could have been rid of all the trouble which came from doing \$25,000 worth of profitless work, and still have made \$1,500 more of net profit.

Here is a tabulation of the volumes of work required just to make up a loss of \$1,000 at net profit rates of from 1 to 10 per cent:

If you lose one thousand dollars and your average profit rate is	You must do, without a profit the following amount of business	If you lose one thousand dollars and your average profit rate is	You must do, without a profit the following amount of business
1% .....	\$100,000	6% .....	\$16,666
2 .....	50,000	7 .....	14,300
3 .....	33,333	8 .....	12,500
4 .....	25,000	9 .....	11,111
5 .....	20,000	10 .....	10,000

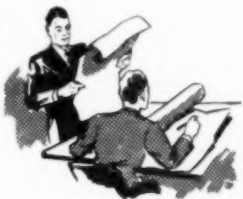
There is nothing fictional about this. It is hard, cold fact. In the lower profit percentages, it takes a huge volume of make-up work.

If you have accurate job cost records and a complete and accurate accounting system, it might be enlightening to check up and see how much better off your firm would have been had it not been the "successful" bidder on certain jobs.

### Materials Estimate Requires Careful Counting

Such make-up work can be avoided in each case by use of a proper estimate, which is a careful, accurate, detailed survey of a prospective job, with intelligent consideration and appraisal of every cost factor. The three principal divisions of job cost are material, labor and overhead.

In making an estimate, the very first requirement is to familiarize oneself with the job. Most jobs come fully equipped with a set of plans and specifications. If these are not clear, do not proceed with the estimate until everything necessary has been clarified. This may involve some argument with the letting authority but it is much better to be safe than sorry, even at the risk of losing a chance to bid the job.



Next, you must consider the material requirements, under which is included all equipment furnished directly by the contractor. Taking off the material requirements of a job is simply a matter of counting and measuring. It must be accurately done by an experienced person or the results are likely to be far out of line with reality. Many experienced estimators have overlooked the matter of the scale — so many inches to the foot — to their own dismay. This scale should be noted on your estimate sheet.

We shall assume that the job has an engineered layout which gives the sizes of all ducts, pipe and fittings and all other material items plus the duct run locations. If there are no local rules to govern, or if the gauges are not shown on the plans, tables are available which give the proper gauges for ducts of different dimensions.

Properly ruled estimating forms are a great advantage. The headings and the column rulings make for greater accuracy, since there is always a chance that wrong totals will result from poor alignment.

### What Should Takeoff Tell You?

When we are through with our takeoff, we should know just how many or how much of each item is required for the job — elbows, grilles, registers, etc. — and each should be counted and listed so the result will show the size and number of each item required.

Duct or pipe runs should be measured on the basis of straight runs for each size and gauge. We are sure that all qualified estimators are familiar with measuring wheels and their use, but for those who are not, there are measuring devices on the market which you can run across the plans to get the number of inches of length of each duct or pipe. The result can be quickly converted to feet according to the scale of the job.

The resulting takeoff should show the number and size of each item which must be purchased as a material unit, the number, size and gauge of each type of fitting and the number, size, gauge and length of all ducts which must be fabricated in the shop. This latter part of the takeoff can be quickly converted into pounds of metal required.

The next step is to multiply the unit cost of each item by the number or amount of the items. These figures, when totaled, will give the total estimated cost of the material.

The only difference between a job cost estimate and an actual job cost record is that one is your approximation of what the job will cost while the other compiles the actual cost of the completed job. They are both job costs and should combine the same listing of materials.

### Use Individual Yardstick for Labor Estimate

There are no standard devices for measuring labor requirements for a job as there are for material. The



only proper yardstick is the one you have established in your own shop, either consciously or unconsciously.

No two shops operate exactly alike in minute detail. Labor efficiencies in the different shops vary considerably for a number of reasons. Efficiency may be increased or decreased by the work of engineering departments, or by other factors, most of which are under your control to a large degree. Whether by intent or not, certain practices and policies come into existence in your shop which result in a certain degree of labor efficiency. This becomes your individual yardstick.

The question now arises, how does one become proficient in estimating labor? There is an answer, but it is not an easy one.

First, it is extremely important that labor units should be developed upon a man hour basis, not in dollars or cents, because man hour labor units are easily convertible into dollars and cents at any wage rate. They are exceedingly flexible and easily capable of adjustments for changes in wage rate or in labor efficiency.

There are several ways in which actual production times may be found. Probably the most simple and effective is through accurate time records which set forth just how much time was spent in producing or installing certain items of material. This may seem difficult, but there are ways and means of training men to do this so that you can have actual production times on a large number of items. For instance, take a 6 x 8 rectangular elbow. If you only use one or two occasionally, it probably would not pay to make up a quantity of them. If you use a lot of them, quantity production is the thing, since it will undoubtedly cost considerably less per unit.

Accurate time records will tell you the average time required per unit, whether producing a few or dozens of them at one time. These should be recorded in the estimator's labor unit book or sheet, and will be a guide

in estimating future work. They will also measure the labor efficiency trend as time progresses.

#### **Get Time Estimate by Observing Work**

Another method is the stop watch or actual timing procedure. This is exceedingly good from the standpoint of flexibility. With this method, it pays to break down the operation into each of its component parts, such as the times required for getting out the material, layout, forming and assembly. This will also give accurate information on another cost factor, waste. The value of such a breakdown is that it gives a good basis for calculating production of other than normal items.

A third and very effective means of getting production or, for that matter, installation, time is a motion picture camera. When this is run off at the same speed as that at which the pictures are taken, you will have an accurate visual record of production which can be referred to at any time.

Since all workmen are not gifted with the same degree of efficiency, production times will have to be an average rather than a fixed quantity. The keeping of accurate records will shortly tell the contractor which of his men are reasonably efficient and which are not.

Installation time records will be more difficult to secure except on the overall basis, i.e., the total time required to install the job. This is not too much help for estimating purposes.

It will pay any firm to go to considerable length to secure as much detail on the job time breakdown as possible. The methods to be used will have to be left to the ingenuity of the individual contracting firm. The more detailed the time information, the greater the value to the estimator, and the more flexible the labor units will be.

We have now discussed the two principal items of direct job cost, material and labor. Overhead will be covered in a later article.

#### **WSB Rules on Professional Engineers**

THE WAGE STABILIZATION Board recently issued an interpretation defining the scope of the 1952 amendment to the Defense Production Act which exempts from stabilization controls the wages, salaries and other compensation paid to professional engineers employed in a professional capacity.

The WSB interpretation of the professional engineers' exemption is identical with that issued by the Office of Salary Stabilization. It defines a professional engineer as a person who, by reason of special knowledge of the sciences and methods of engineering analysis and design, acquired by professional education and practical experience, is qualified to apply such knowledge for the purpose of rendering professional services or accomplishing creative work. A person is qualified as a professional engineer if he holds a professional engineering degree from a school authorized under the laws to grant academic degrees in professional engineering. A person licensed or registered to practice as a professional engi-

neer in any State, Territory, or possession of the United States or in the District of Columbia is qualified as a professional engineer.

Persons engaged in carrying on routine mechanical activities, or persons employed as technicians or artisans (no matter how highly skilled), advisers on sales promotion, business methods and operations or in similar capacities, are not considered professional engineers.

The statutory exclusion from wage and salary stabilization extends to a professional engineer only if he is employed in a professional capacity. A person is so employed if he performs engineering work of a professional character within the meaning of the Regulations, Part 541, issued by the Administrator of the Wage and Hour and Public Contracts Division pursuant to section 13 (a) (1) of the Fair Labor Standards Act of 1938, as amended (29 CFR, 1950 Supp.). A person, qualified as a professional engineer, but not actually employed in such work, is not exempt.





THE ENGINEERING department is given ample space. Shown here is part of the engineering and drafting room



MODERN HANDLING and storage methods are used in the warehouse

## How Shop Reorganized

**... to handle more business.  
Departments were set up for each  
of the firm's services**

MANY HEATING and sheet metal shops have increased tremendously in size within the last decade, or even the last four or five years, reflecting the increased demand for warm air heating, air conditioning, roofing, insulation and similar services and products. What happens to the organization of a firm as it doubles, perhaps triples its staff, facilities, and business volume? How should it revamp itself to meet these growing responsibilities?

Departmentalization is one answer. The value of establishing different departments to handle different phases of a growing business is exemplified by V. D. Ramseur & Sons, now one of the largest heating and sheet metal contractors in the South.

This firm was established in 1922, with a staff of 18 employees. Today, the sales staff alone equals the original total employment. The present staff is 125 strong, and recent contracts have tripled annual sales of the twenties. Operations now stretch to Alabama, Georgia, Tennessee, Virginia, West Virginia, and North and South Carolina.

To accommodate its growing staff, the firm has been

moved twice, most recently to a plant with 1500 sq ft of floor space for offices and showrooms, 6000 sq ft for the shop, and 9600 sq ft for the warehouse. The warehouse, operated by Carolina Wholesale Co., a division of the company, utilizes a fleet of 35 trucks.

### Departments are Set Up

Perhaps the most significant change has been in the variety of services offered. The firm was established as a sheet metal and roofing business. But one at a time, new lines were added — warm air heating, ventilation, summer cooling, and in 1935, insulation, weatherstripping and siding.

After World War II, individual departments were established for each of the different services. This geared the company towards meeting more varied demands, and allowed it to handle the increasing volume of business satisfactorily.

In most instances, each department started simply as a one man operation, that man being a salesman hired specifically to sell a line which was felt by the management to be worthy of inclusion. As the volume or



THIS EARLY view of the sheet metal shop shows the partially completed air conditioning duct over the canteen



THE LOBBY-WAITING ROOM is completely air conditioned

potential increased and new men were added, the sales and management of that line were delegated to a responsible person, usually one of the original salesmen, who supervised its operation. As a department manager, this person was relieved of his primary duty as a salesman, and became somewhat of a sales manager, responsible for the salesmen working his particular field, for the handling of their orders, direction of the work through his mechanics and foremen, scheduling of work, and for ordering an adequate inventory for his department.

Individual headquarters have been established at the new plant for each department. An office is provided for each department manager, which is headquarters for that department.

Each department is given ample space for operation. The engineering department, for instance, accommodates a number of drafting and tracing tables where all the jobs necessary may be figured, designed or blueprinted.

#### Company Must be Knit Together

When a company becomes departmentalized, there is always the danger that it may lose the sense of being one unit — one organization working for common aims. The large staff, in all the various departments, must somehow be given this feeling of unity. In addition, the departments must be very well coordinated so that they work together like the parts of a well-oiled machine. In business, "the right hand must know what the left hand is doing," or the firm will deteriorate into a number of smaller firms each specializing in its own line.

This company provides the necessary feeling of unity in various ways. First, it is made clear that company benefits extend to employees in all departments. For example, in the old location, the company offices were air conditioned. However, in the new plant, air conditioning has been extended to include the sheet metal

shop as well. The firm is one of the first in its area to offer completely air conditioned working facilities to all its employees. Even the warehouse has been designed for comfortable heating during the winter months.

Second, the company issues a monthly newspaper for all the employees. This paper welcomes new employees, covers topics of general interest such as local elections, gives news of new company products and services, and comments on company picnics and other events of interest. There is also a weekly sales letter mailed to the salesmen, which offers gossip, advice in the form of humorous parables, and covers various trends in the field.

#### Departments are Coordinated

The various departments are coordinated in a number of ways. The actual physical set-up in the plant is conducive to communication between them. The offices of the various departments are arranged in the two wings of the building so that the more closely allied lines are adjacent; i.e., heating, air conditioning, sheet metal, and engineering in one wing, roofing, siding, insulation, built up roofing, and others in the opposite wing. The salesmen have an office next to the show room, each salesman having his own desk. The sales manager is next to the sales office.

There is also a conference room capable of seating over 40 people. This has proved a great encouragement to sales meetings, and meetings between members of different departments.

An inter-communications telephone system connects all departments. A public address system is used for paging the shop, warehouse and grounds, if it is necessary.

#### Shop Functions with Departments

Operations in the shop are supervised and controlled from the superintendent's office, which has a plate glass

wall overlooking the shop. Job orders and work assignments are made each day, or when necessary by the sheet metal foreman. Requisitions are turned in to him on all jobs which require sheet metal work. (For example: on an air conditioning job which requires duct work, the air conditioning department must submit a shop work order and a layout or specifications of its requirements to the sheet metal foreman in order that he may properly schedule and charge this work.)

When an immediate job is not at hand, stock items such as gutters, flashings, furnace pipe, heads and elbows, etc., are made for inventory. These are mass produced by men who remain in the shop for such work at all times. The mechanics draw their material from Carolina Wholesale Co., charged to the job by the foot, or per item, and take it to the job for installation. In other words, the furnace installation men draw their material from stock, which was made up by the sheet metal department for the wholesale company. The same is true of gutters, roofing, etc. The shop crews make up material for inventory whenever necessary; other crews draw this material and install it on the job.

### Order Passes Through Many Hands

As a firm grows, and the network of departments increases, steps must be taken to insure that each job order passes through the right hands and is properly executed and recorded. How are these orders handled by V. D. Ramseur & Sons?

When a sale of insulation, for example, is made for a home, the contract is signed and application is made for credit (FHA Title 1). The contract and application are turned in to the department manager. The department manager checks the order for accuracy, OK's it, and turns it in with the rest of the day's business to the credit manager.

The credit manager gets a credit report, and turns in application and credit report to a lending institution. If approved, the order is then written up with complete directions and specifications. One copy goes to the bookkeeping department where a job record is established. The other copy goes on file for scheduling.

The day before the work is to be done, a withdrawal order is made on the exact amount of material needed

to do the job. That night the night loading crews of Carolina Wholesale Co. draw the material, load the truck, and the job is put on the ready file for the foreman of that truck to pick up in the morning. The crew does the work. Its time is posted from time cards to the proper job number.

When the job is completed, the order is turned in by the foreman. Upon receiving the original copy of the order, the bookkeeping department pulls the job from its "in progress" files. Labor and materials have been charged. Any necessary return of materials was credited when the truck returned. Labor and material are totaled, and the job record is returned to the department manager who checks it against the salesman's estimates, puts the commission on the record, and returns it to the bookkeeping department for billing.

At present, there are departments (with department managers) for insulation, weatherstrip and siding; built-up roofing; composition roofing; heating; air conditioning; sheet metal; engineering; office; credit; and service. There are officers in charge of warehousing and purchasing, and sales promotion and advertising.

What kinds of jobs do all these departments handle? The built-up roofing and sheet metal work consists primarily of roofing of new mills and industrial buildings and re-roofing old ones. Commercial establishments are serviced for roofing, sheet metal, heating and air conditioning. Numerous housing projects have been among the company's contracts, and it has on a number of occasions roofed, or re-roofed an entire mill and its village of 200 to 400 houses. In the heating, insulation, siding and composition roofing departments, sales are aimed primarily at the residential market on an individual basis.

The firm is nearing completion of one of its largest single roofing and sheet metal contracts. There are over 4500 squares in this job. It has also just completed air conditioning, (100 tons), roofing, insulation and sheet metal work on a new store building.

Such jobs, the company feels, can only be done by a large staff which is also a specialized one — that is, which is divided into departments specializing in different lines. When such departments work well together, the company can offer the best and most varied type of service.

## Must Increase Productivity

"Industrial productivity must increase 45 per cent within the next ten years if the United States is to maintain a balanced, expanding economy!" This was the keynote of a talk presented at the recent Centennial of Engineering in Chicago, by Frank R. Benedict, industrial products engineering executive of the Westinghouse Electric Corp.

Speaking before the American Institute of Electrical Engineers, Mr. Benedict added that this increased productivity could be achieved only by more intensive application of new technological developments through-

out industry. The need for this increase, he maintained, is brought about by the "insistent demand for a constantly improving standard of living by a steadily increasing population."

He stated that a major problem in applying new technological developments is that of completely coordinating development of products with development of tools to manufacture them. Without such coordination, economical manufacture may not be possible. For many new products, it may be advisable to build full-scale pilot plants to "prove the design for manufacture."



FIG. 1 — OFTEN REPAIRS on flashings are made with a fold in the middle to allow for expansion and contraction



FIG. 2 — CAP FLASHING with half round roll in center and 6 in. cap at joints did not wear well

## Making Copper Roof Flashings Last

Lawrence E. Gichner  
Gichner Sheet Metal Works

**How can we solve the problem of copper roof flashings which split open and do not wear well? In simplicity of design, says the author, lies the answer. Where many complicated bellows arrangements fail, simpler ones, which allow the metal enough freedom of movement, succeed**

How CAN WE create copper roof flashings which will really last? The key to solving this problem seems to be simplicity of design. We must arrange for copper to expand and contract without splitting open to the elements.

U. S. Government officials responsible for building plans and specifications throughout the country recently made a tour of inspection of both private and public structures. They found that complicated techniques of bellows arrangements failed, while simpler methods of locking and soldering joints proved successful.

### Complicated Arrangements Fail

For example, on some hangars at the Washington National Airport, flashings along fire walls have not

held up well, and indications are that new flashings have recently been installed to replace old ones. The new ones, of lead coated copper with a rounded ridge in the center, are starting to show hard usage. Metal screws installed at seams to reinforce their strength have popped their heads and sheared off. Intermittent seams were left open and capped with a 6 in. band (see Fig. 2). These bands were heavily caulked at the edges. It is the writer's opinion that a better job could have been done by eliminating the 6 in. cap, and simply lapping the metal at desired areas, leaving it open to act as an expansion joint with caulking used as a sealer. Three thicknesses of metal, one lapped on top of the other, could have been reduced to two with better results.

At the ends of long runs of flashings, where fire walls joined outside parapet walls, an ingenious bellows arrangement was built of lead coated copper. Heavy application of solder indicated that frequent repairs had been attempted. Nevertheless, the insertion of a knife blade was possible in the parting metal, at the seam (shown in Fig. 3).

The administration annex of the national headquarters of the American Institute of Architects, built in



FIG. 3 — BELLOWS ARRANGEMENT at end walls slit at folds. Insertion of knife blade was possible



FIG. 4 — IN THIS LONG run of base flashing, a fine fissure in the copper was revealed

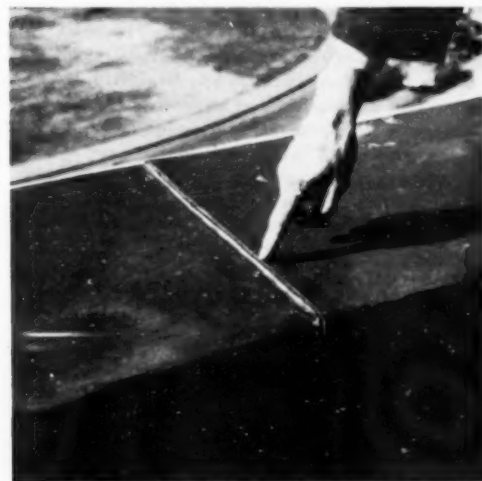


FIG. 5 — THIS TYPE of cap flashing, left open every 24 ft and caulked, seemed to hold up best over a long period



FIG. 6 — STANDING SEAM on vertical surface of cap flashing is still in good condition after about six years

1940, was also visited. When officials were checking over the metal work which indicated that recent repairs had been made, the long run of base flashing (shown in Fig. 4) attracted attention. Slag was brushed away, and a fine fissure in the copper revealed the source of a leak that had shown up on the plastered ceiling below.

#### Should Allow for Expansion by Simple Means

The most trouble free installation was found on the main building of the Washington National Airport. Here the base and cap flashing were locked together without solder, leaving the metal free to move easily at the junction of the vertical and horizontal surfaces. Seams of the cap were soldered, but every third joint was locked

and not soldered. This third joint was simply caulked to make it watertight. Left open at approximately every 24 ft, it provided the necessary free movement to keep the metal from splitting and tearing elsewhere (see Fig. 5). Vertical joints of the base flashings were all soldered.

After 20 years, the flashings appeared to be wearing well. For the record, it should be noted that the tile roof at the base of the base flashing is badly disintegrating, but this can be attributed to the failure of the tile, not the copper.

A patented copper joint recently developed by one company may prove valuable. It is designed to permit safe movement of the copper at the junction of a flat built up roof and masonry wall. It comes with open seams





FIG. 7 — FOR REPAIRING split at junction of copper gutter lining and inside drains, lead is first rolled on pipe (left). Then the lead sleeve, now pulled together, is fitted into the outlet (right)

at the sides of the joint to permit the fastening of adjoining lengths of straight base flashing. The joint is formed at an angle with a 4 in. horizontal leg and a 12 in. vertical member. The functional part is a 4 in. half circle extending the full upright length of the flashing.

Judgment of the committee varied as to which was the best method of copper flashing. In the writer's opinion, the most trouble free method is a 90 lb mineral surface base flashing laid over a cant strip and a copper cap flashing made with standing seams (as in Fig. 6).

## Says A. C. To Boost Home Power Sales

ALL-ELECTRIC year-round air conditioning represents a great untapped source of potential kilowatt hour sales for America's electric utility companies. H. M. Brundage, general manager of the General Electric Company's Heat Pump Department said recently at the annual meeting of the Southeastern Electric Exchange. He said that use of electric heating and air conditioning by the American public could triple or quadruple the current residential sale of electric power.

Pointing to the tremendous possibilities for expansion in this area, he said that although there were over 400 million electric consuming devices in American homes today the average residential consumption of electricity, including lighting, "amounts to only 1900 kwhr per year or about \$53.40 per year per home."

"This is the area in which electric utilities should look to substantially increase their power loads of the future," he said. "It is an ideal field not only because of its great potential, but particularly because we will be making a distinct contribution towards improving the living standards of the American people". He said, "When we eliminate drudgery, inconvenience, dirt, annoyance, etc.,

and in return supply comfort, convenience and cleanliness, which all-electric year-round air conditioning does, it is amazing how fast the American public responds."

### To Study Methods for Civic Development

THE UNITED STATES CHAMBER OF COMMERCE has formed a 34-man Construction and Civic Development Committee for 1952-53, headed by Norman P. Mason, treasurer of the Wm. P. Proctor Co., North Chelmsford, Mass.

The committee includes five Chamber directors and representatives of all segments of the building industry from every section of the country.

During the year, the committee will consider such subjects as major factors affecting construction markets (both privately and publicly financed), government control of materials, credit and rents, and the planning of private and public construction projects.

The committee also will concentrate on a program for more and better apprentice training in the building trades, more intensive research in the construction field, and modernized city planning, zoning, and building codes.

# Attractive Shop Interior Boosts Sales

**A clean, attractive shop interior can be the most effective kind of "sales talk." Functional arrangement of equipment, good lighting and adequate facilities will pay off by creating a favorable impression**

THE INTERIOR of a place of business, whether it be office, shop or factory, should be as attractive and up-to-date in every respect as the exterior, wherever possible. The importance of impressing the public by attractive interiors is demonstrated by the large firms throughout the country which spend millions of dollars annually in public relations activities to make people aware, by plant tours and other means, of the addition of new equipment or facilities, more congenial working conditions, etc., in their plants. Such public information increases the effectiveness of the companies' advertising messages.

## **Interior Should Suit Type of Business**

In shops and stores which are consistently visited by customers, it is extremely important that the general appearance of the interior make a favorable impression. This applies to any type of business, from sheet metal shops to jewelry stores. Of course, the heating or sheet metal shop cannot, and should not, be decorated or set up as if it were the jewelry store. All so-called public impression factors must be in keeping with the character of the business itself. The sheet metal or heating supply shop may not be thickly carpeted, but it can be smartly in character in the matter of neatness and attractiveness. Fixtures can be up-to-date and gleaming. Stock can be neatly and conveniently arranged on the shelves, and equipment can be kept in good repair. There is sales appeal in the dull gleam of wiped metal, in the punch press, the drill and the lathe.

Recently I was in the office of the sales manager of a large shop, when a visitor, representing a new account,

arrived. It was a small account, but he had come from many miles away to see for himself what kind of company he was dealing with, to look over the physical properties of this firm which proposed to sell him goods on a contract basis. He was impressed by his tour through the shop and offices, by the new facilities and new construction under way. He went away feeling the shop could give him the kind of product and service that he wanted.

## **Attractive Shop Boosts Morale**

Even if customers never see the interior of a business, the people who work there do. They live in it eight hours a day.

If equipment is outmoded, if facilities are inadequate, obsolete or in a bad state of repair, employees may be unenthusiastic about their work, may even complain to friends, giving people on the outside an unfavorable impression.

A satisfied staff, contented in the working environment, is just as essential to the successful operation of a business as a good product. Such a staff is a tremendous sales force. Its enthusiasm can create rising prestige and good will for the company, the product it sells, or the services it renders.

There is no need for ostentatiousness in equipping a business interior. Dignified simplicity, cleanliness, attractiveness, functional arrangement, good lighting, adequate facilities and the expert use of color — all should be sought after. But all should be in character with the type of business you are operating. When your shop or office interior has these qualities, you will have a happier, more enthusiastic staff, and you will have made a good public impression which will pay off in sales and make your advertising dollars give you more results.

*This is the tenth in a series of articles by W. Frank Welch, president of The Advertiser, Inc., on "Making Ourelves Acceptable."*

## **Air Conditioning Exposition**

THE 11TH International Heating and Ventilating Exposition, the largest air conditioning exposition so far, has been rounded into form. The display, which is to be held at the International Amphitheatre in Chicago, next January 26 to 30, has expanded from the huge first floor and arena into the entire north wing of the second floor.

The exposition is being held under the auspices of the American Society of Heating and Ventilating Engineers in conjunction with the Society's 59th annual meeting. Heavy attendance is promised from the entire United States as well as significant representation from the free countries in all parts of the world.

Every class of heating, ventilating and air conditioning

equipment will be presented in the exhibits, which will include, as usual, a high percentage of apparatus brought into production since the last exposition, which was held in Philadelphia two years ago. The increased stature of the heating and ventilating industry is evidenced by the great amount of costly research that has been invested in many of the new appliances that are to be shown at the exposition for the first time, especially in furnaces and burners fired by coal, oil or gas. For the new competition in design sparked by the rapidly expanding distribution of natural and liquefied petroleum gases has brought forth improvements that otherwise might not have seen the light for a number of years to come.



REGIONAL COOPERATION is symbolized by the three presidents of the associations (*l. to r.*) Howard Carpenter, Florida; W. M. Jones, Sr., Georgia; and Joe Piper, Carolinas



AGENDA COMMITTEE chairmen met with presiding officer: (*l. to r. seated*) George Ferber, Florida; K. F. Dunlap, Jr., Georgia; (*l. to r. standing*) W. M. Jones, Sr., Georgia; and W. H. Arthur, Carolinas

## Three Associations "Talk It Over"

The need for regional cooperation was emphasized at a recent joint board meeting of roofing and sheet metal contractors associations representing four southeastern states. Common problems were discussed, and the contractors heard some interesting suggestions on how to increase profits and improve industry standards.

METHODS FOR raising industry standards and assuring future regional cooperation were among the points covered at a unique contractors' business forum held recently at the King and Prince Hotel, St. Simons Island, Ga. The governing boards of three roofing and sheet metal contractors associations, representing North and South Carolina, Florida, and Georgia, met in a joint board meeting to discuss common problems of the industry and of association work in the Southeast.

Presiding officer W. M. Jones, Sr., Augusta, president of the Georgia association, stressed in his opening address that perhaps the greatest problem of the industry was "too small a take home pay." "Generally speaking," he said, "over the past year or so, members of our industry have been finding it difficult to make a profit commensurate with the amount of their invested capital, volume of business, and risks incurred."

In regard to the first two factors, he stated that the invested capital of firms represented by members of the three boards had been estimated from reliable sources to

be about \$61½ million, these in turn representing members of their respective associations with an estimated invested capital of about \$26 million. "Taking the average capital turnover in our industry," he went on, "that means we here today are representing an estimated volume of sales in the Southeast of more than \$100 million."

The accomplishments possible from joint meetings of this type were stressed by Howard Carpenter, West Palm Beach, president of the Florida association. "In this day of modernized businesses," he said, "management must be twice as watchful as ever before, and must handle many times as many problems as before." He pointed out that it was therefore important for management to meet and discuss, and above all, to cement personal relationships on a regional basis.

### CPA "Contractor's Best Friend"

A contractor's best friend is his certified public accountant. This point was brought out by Joe H. Piper, Greenville, S. C., and president of the Carolinas' association. He cautioned those present to "use your CPA frequently. Let him analyze your costs and overhead at least quarterly and then use these costs and overhead figures in your estimates. Only by keeping continually posted on your own operation can your business survive and give the proper returns for your invested capital."

The question of making a fair profit on jobs was continued as the first item for open discussion in the forum. Agenda chairman K. F. Dunlap, Jr., of the Georgia association, asked Hilton Bowles, Carolinas association, for a description of a survey on the subject



AN EVENING fellowship hour was held in the hotel's lounge. Representing the Florida association are (l. to r.) P. D. Arnold, Frank Tack, and Don Brown



ALSO AT the fellowship hour were (l. to r.) Mr. and Mrs. W. M. Jones, Jr., Georgia, and Mr. and Mrs. Earl Delay, Carolinas

recently conducted by a committee of the National Roofing Contractors Association, of which he was chairman. Mr. Bowles stressed the finding that overhead percentage may vary considerably with the type of business done — that is, with the size of the contracts.

There was an extended discussion of various markup methods: cost of materials and labor, plus markups for overhead, then markup for profit; cost of labor and materials, plus markup covering both overhead and profit; and cost of materials and labor, with markup for overhead and profit over labor only. The conclusion was that regardless of the method, the contractor must use a markup of between 50 and 60 per cent over material and labor costs. It was pointed out that a contractor runs into difficulty if he figures the right percentage, but then takes some jobs, for one reason or another, for less markup. This results in an unsatisfactory profit return at the end of the year.

#### Insurance and Safety Programs Related

Compensation and public liability insurance was next on the agenda. Chairman Dunlap pointed out that, though in Georgia and other southeastern states an employer carries a maximum liability for employees, the liability of the insurance company underwriting is based on a \$48.00 per week wage. He stated, "While at the time this was adopted it was, in a general sense, fair . . . today the average workman in our industry receives two and sometimes three times this amount." He said that since premiums are paid on the total payroll, irrespective of this \$48.00 maximum liability, the contractor must shoulder an extra burden.

It was also pointed out that failure to have adequate insurance coverage may wipe out a business if unforeseen damage suits are brought against it. Mr. Dunlap stated that since insurance rates are computed by the various state authorities on the basis of losses, little could be accomplished in a reduction of rates except by reducing losses. Contractors were, therefore, urged to practice

safety programs because such practice would lower their insurance rates.

The subject of government controls, originally on the agenda as the third item for discussion, was passed over since a decided trend had developed toward the easing of many controls.

#### Discuss Unions and National Associations

On the issue of local labor unions, contractors were urged to be strong in upholding their rights when signing a new contract. Contracting for corrugated work was mentioned in relation to union problems. This type of work is designated to a trade individually, with each job. Contractors were told to be sure, if bidding such work, that it be assigned to either the roofing or sheet metal trades before going ahead. Otherwise, they might have to "import" carpenters and others, or have the company's mechanics join other unions.

Another point covered was the desirability of close cooperation with national associations. It was recommended that an open discussion be held concerning ways and means for working more closely with these groups. Examples were cited in which national association files contained information which was needed to meet local and state problems.

The adoption of uniform business forms, especially bid forms, was urged for the three associations represented. Chairman Dunlap pointed out that in a great many cases, members of each of the associations bid on the same jobs, and such bid forms would be to their mutual advantage.

In regard to future joint meetings, a motion was passed that the boards hold one yearly, with the morning devoted to individual meetings of each board, and an afternoon joint meeting.

#### How Industry Standards can be Raised

The importance of raising standards in the roofing industry was stressed by Steve Raymond, Coral Gables,

(Continued at bottom of page 58)

# Profit Sharing Plan Builds Morale

**Roy S. Apple**

**Council of Profit Sharing Industries**

**An Ohio heating firm has established a profit-sharing plan for its employees. This plan, by giving the staff a real interest in the business, has encouraged initiative and cooperation, and has proved a good sales builder**

IN KENT AND RAVENNA, two neighboring Ohio towns, a company which has no sales force and which represents only 3 per cent of the heating firms of the area does 35 per cent of all heating installation work. Officials of the company, Greer Automatic Heating, attribute the firm's success in large measure to its profit sharing plan.

The company pays the prevailing wage in the industry, then splits roughly 20 per cent of the profits before taxes. The more profits, the bigger the profit sharing payment for each man. The average man, with his salary plus profit sharing payments, earns approximately \$5000 per year, far above the average salary for the same type of work in the community.

Though heat installation work is usually seasonal, the company's employees get their paychecks regularly. Some of them do maintenance work during slack periods, while others attend heating schools to learn new methods. In the past few years, the men have enrolled in schools in Oklahoma, Texas, Michigan, and New York.

## **The Idea Behind the Program**

The company officials feel that where a staff has no particular interest in the firm for which it works, that

firm cannot be too successful. Therefore, the company set out to get the cooperation of the employees by interesting them in the business itself. The profit sharing plan makes each man aware of the business and the profits coming in.

The only road to profit is production. The plan is designed to eliminate one main obstacle to production—employee resistance to the employer. It makes a team of the entire staff.

Since, under this system, each man wants to do the best job he can in the best way possible, customer goodwill is built up, which, in turn, means more profits.

## **Initiative Encouraged**

In addition, many new ideas have evolved from the program. One employee invented a tool that did the job of two men. It accelerated work, meant lower prices to the consumer, and meant more money for the employees. The firm is also putting into effect a new use for warm air — the heating of bathtubs which are located on the outer wall of houses. The hollow space between the lining and outer shell of a tub can be used as part of the warm air duct that heats the bathroom. One heating duct is brought under the tub, while another leads out from the opposite end of the tub. Warm air circulates underneath, keeping the tub warm at all times.

The company was founded by Redmond Greer, in 1939. It is a member of the Council of Profit Sharing Industries, Akron.

## **THREE ASSOCIATIONS —**

*(Continued from page 57)*

Fla., member of the Florida board, in his address, which closed the meeting. He deplored the fact that "fly-by-nighters," with almost no overhead, paying no license fees, and carrying no insurance, are allowed to do "shoddy work" and to issue worthless guarantees covering that work. "This is one of the things that hurts our industry," he said. "This unfair competition is also forcing some otherwise reliable firms to skimp on workmanship in order to survive."

He urged that ordinances be adopted through the building departments of various municipalities which would contain the following types of provisions: a uniform code covering quantities and types of minimum materials for a job, with uniform and standard methods

of installation; requirements that permits be taken out for work on all new construction as well as for replacement work, permits being issued only to contractors who hold occupational licenses and are in good standing; requirements that a contractor, to become licensed, take an examination covering an actual installation, ordering the materials needed, reading of blue prints, estimating costs, facts on insurance, etc., and that he show financial responsibility and proper insurance coverage; provisions that the building inspector be notified when a job will begin, so that he can inspect the materials, and the progress of the work at various stages.

He also urged firms to cooperate with local, state, and national authorities and associations in raising standards, and to maintain neat and attractive establishments which create a good public impression of the particular business and of the industry as a whole.



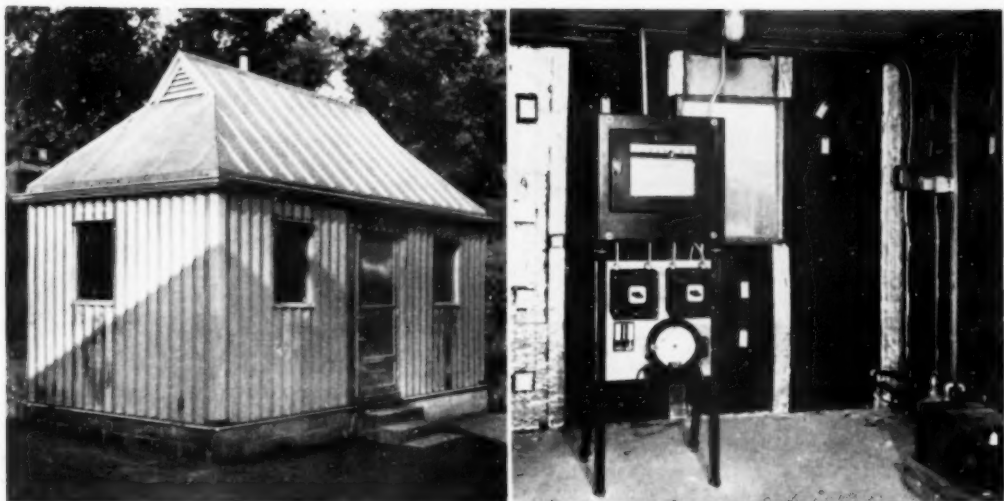


FIG. 1—THE TEST BUILDING, *left*, presents a complete exterior of stainless steel, including the roof and door. *Right*: These instruments provided a record of inside surface and within-panel conditions

## Test House Provides Facts On

# Curtain Wall Panels

A. R. Stargardter

Chief Metallurgist  
Washington Steel Corp.

A lot has been written and said lately about a new building method which seems to have a very bright future — stainless steel-sheathed curtain wall panels. But do these panels provide sufficient insulation? In general, do they live up to their reported service performance? To answer these and similar questions, the author's company erected a test house and conducted a series of practical experiments. It also developed new techniques in panel construction which would insure built-in protection against expansion, contraction, and other adverse conditions

DURING THE PAST five years, enormous interest has developed in the stainless steel-sheathed curtain wall slab type of building wall construction, particularly for multi-

storied buildings. Trade journals, popular magazines, and even the newspapers have stressed such advantages of the curtain wall panel as lightness, high insulating value, ease of application, savings in construction costs and floor space, ease in cleaning, flexibility in design, and other qualities.

Since these panels probably will figure so importantly in future industrial, commercial and residential construction, we decided, in the spring of 1951, to do some practical research on them. The mechanical features of the panels, such as their grouping, methods for erection and aligning, and methods for fastening to the structural members of the building proper were already well developed. Therefore, we decided that the most constructive contributions might be made in improving methods of wall panel construction, and in verifying the reported service performance of the curtain wall panels with some practical data. To this end, we constructed a small experimental building with walls composed entirely of stainless steel curtain wall panels.

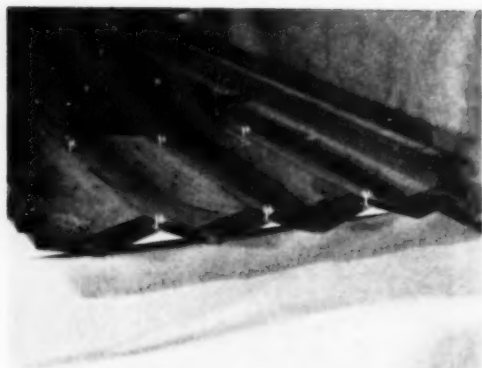


FIG. 2—THE FLUTING of the sheets was designed to combat expansion and contraction. Note twisted brass studs. They were attached before the concrete was poured to assure good adhesion

In regard to service performance, we found, as will be described more fully later, that the panels demonstrated highly desirable insulating values, that they did not deteriorate during the period of testing, and that they stood up exceptionally well in fire tests. As to the construction method, we aimed at both economy and effectiveness. We tried to provide built-in protection against expansion, contraction, freezing and thawing of condensation within panels, and other adverse conditions.

#### Decide Which Type Steel and Aggregate to Use

We felt that savings could be effected in the construction of the panels if the steel used was as thin in gauge as possible. We found, after some experimentation, that adequate rigidity could be obtained by forming the stainless steel facing from 28 gauge sheets which had been rigidized by rolling in a design as carried out by a company we knew of which specialized in such work. Since the cost of rigidizing amounts to the increased cost of one higher gauge extra, the metal facings would bear a per lb cost equivalent to 30 gauge stainless sheet.

In our method of construction, we press-formed 36 in. wide 28 gauge sheets previously rigidized with what we considered an attractive small-diamond design, and cast the concrete backing material directly on the pre-formed stainless steel facing. The design of the panel was such that 36 in. wide sheet yield finished panels 28 in. in width.

In recent years, a number of expanded aggregate materials have been discovered which, mixed with cement, produce lightweight insulating concrete weighing as little as 25 lb per cu ft and offering about seven times the insulating value of ordinary sand and gravel concrete. Among these aggregates is perlite, which we selected for use in the panels. We believed it to have a number of desirable properties: sufficient strength for load requirements of a wall panel; low thermal conductivity, so that about 4 in. of thickness provides ample insulation; light weight, so that a 4 in. thick panel weighs only 9 lb per sq ft; and excellent performance in workability,

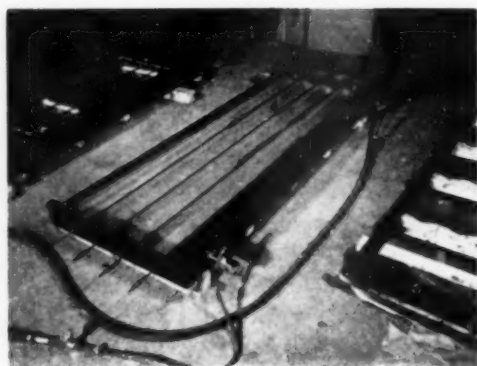


FIG. 3—BEFORE CONCRETE was poured, facings were placed in suitable wooden supporting forms. The attached air vibrating system agitated the form during pouring

shrinkage, water absorption, fire resistance, resistance to freezing and thawing, etc. The perlite concrete is mixed with cement in much the same manner as ordinary concrete, except that for our use, an air-entraining agent was added to foam the concrete to its extreme lightness.

#### Construction Features Prevent Damage

Before casting the concrete on our stainless steel facing forms, we adopted the measure of attaching clips, by stud welding, to the inside surfaces, so that when looped and covered with concrete these clips would provide desirable adhesion to the metal backing and would diminish any "oil-canning" tendency. These bonding loops may be seen in Figs. 2 and 3.

In casting our curtain wall forms, we placed the stainless steel facings in suitable wooden supporting forms. The fluting of the sheets, as shown in Fig. 2, was believed to be the design most efficient in combating the problem of expansion and contraction. We also felt it furnished an attractive building exterior, further enhanced by the rigidized pattern diffusing the reflected light.

The tongue and groove method of panel joint was provided for both vertical and horizontal joints, the sheet edges visible in Fig. 2 being submerged in concrete, thus forming a rigid finished panel with no exposed sheet metal to be damaged in handling.

To combat possible moisture condensation and entrapment on the inner face of the concrete-metal contacting surfaces, we constructed full length voids in the concrete by inserting 1/2 in. rods in the metal pans prior to pouring the concrete and removing the rods after the concrete had partially hardened. Small vent holes were inserted at the ends of the sheets to provide harmless egress of moisture. The position of these holes can be seen in Fig. 2 while the 1/2 in. rods are shown in place in Figs. 3 and 4.

Incidentally, there is practically no increased susceptibility to surface denting in the area of the voids. In



FIG. 4—AFTER THE PERLITE concrete has completely filled the panel and set, the rods are removed, leaving voids which permitted moisture condensation to drain

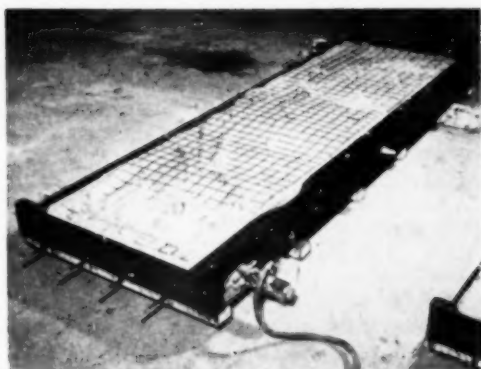


FIG. 5—REINFORCEMENT was provided during casting in the form of this 2 x 2 in., 12 gauge galvanized wire mesh, set about 1 in. within the concrete structure

casting the panels, reinforcement was provided in the form of 2 x 2 in., 12 gauge galvanized wire mesh which was included about 1 in. within the concrete structure as shown in Fig. 5. During the pouring of the concrete the form was constantly agitated by an air agitator also visible in Fig. 5.

#### Test Building Constructed and Equipped

Our test building is a single room structure 10 x 20 ft. with all wall surfaces in the form of curtain wall panels 28 in. in width with an average thickness of 4 in. To make the walls, we used 16 panels 8 ft long, nine panels 4 ft long, and nine panels of special dimensions to form the corners and to go above the three windows and the door, as shown at the left of Fig. 1.

The building presents a complete exterior of stainless steel including stainless steel roof and door. While most of the stainless steel is Type 302, we have included some Type 430 areas for comparison, including one curtain wall panel, as well as some gutter and one roofing sheet.

The curtain wall panels were placed on a concrete block foundation wall, so that they carry the weight of the roof in addition to wind loads. The interlocking of panels by means of the vertical tongues and grooves provided adequate rigidity to the walls, all joints being cemented with a suitable insulating cement. The panels' horizontal grooves were fitted to a steel track imbedded in the foundation wall, making accurate alignment possible when the wall units were placed in position. A step in the construction is shown in Fig. 6. This type of construction should find wide use in one story buildings such as gasoline stations, food marts and shopping centers, offices, etc.

Since vapor condensation and thermal insulation of the wall panels were the most important subjects which we intended to explore by long-time testing, the floor and ceiling were constructed so as to offer unusually good insulation.

Thirteen different commercial vapor barriers were applied by brushing to the inside faces of 23 of the 25



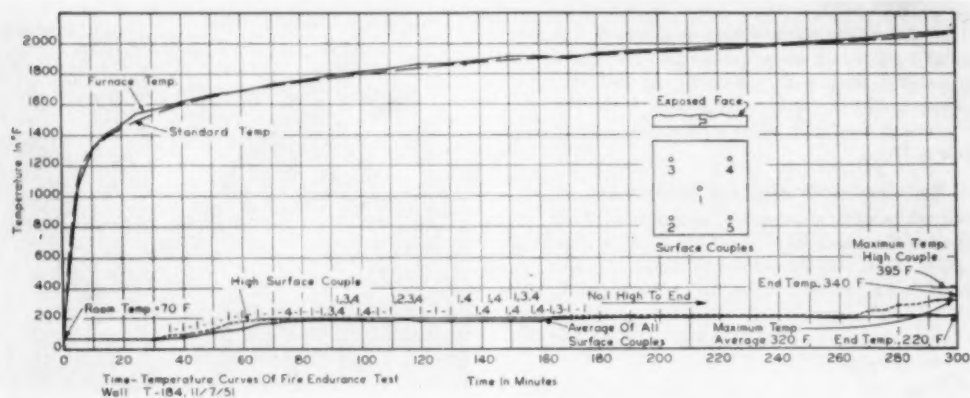
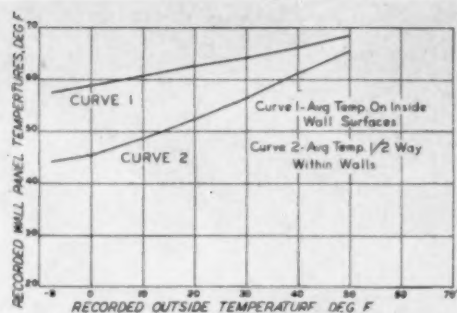
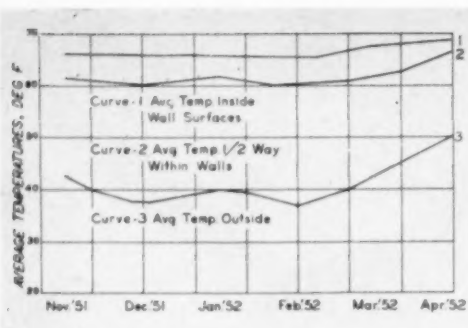
FIG. 6—A WALL PANEL is raised to vertical position at the test building. Twenty-five large panels like this were used, plus nine smaller ones for corners and above the windows

large panels, while for comparison two panels were left with no vapor barrier compound applied. No interior covering was applied over the vapor barriers or over the two blank panels so that necessary tests could be conducted. In addition, various concrete-aggregate ratios were included, the panels being constructed of cement-aggregate ratios of 1-6, 1-5, and 1-4, variously distributed.

An automatic humidifier was installed to insure a constant relative humidity of 50 per cent, and an automatically regulated gas heater maintained a constant temperature of 70 F, plus or minus 2 deg., during the entire period of test, which extended from November 12, 1951, to April 15, 1952, or about five months covering the cold season.

#### Various Recorders Installed

Since the dewpoint of air at 70 F and 50 per cent relative humidity is about 45 F, and since the passage of water vapor will be toward the outer face of the wall panels, in cold weather when the temperature is



below 15 F we can expect moisture condensation somewhere within the concrete wall, and as the outside temperature goes above or below 32 F, we can expect alternate freezing and thawing of the moisture condensed within the walls. Perhaps our built-in system of venting will permit the moisture to be harmlessly removed by evaporation, and perhaps not.

In order to gain an overall picture of the insulating value offered by our variously treated wall panels as well as possibly some hint as to the internal effects of freezing and thawing (if this takes place) on the insulating value of the concretes, we arranged to secure temperature readings of the interior wall surfaces and also at points within the concrete panels midway between the inside and the outside metal surface. Later on we plan to secure some core tests for examination of concrete structure, moisture absorption, etc.

In order to secure the desired information we installed within the building the following instruments:

1. A recording instrument which maintained a continuous record of both temperature and relative humidity during the entire period of test.
2. A 16-point automatic pyrometer recorder which maintained a constant record of outside temperatures measured by two thermocouples inserted at opposite ends of the building and also recorded the temperatures of the inside wall surfaces and the temperatures half way in the wall panels through thermocouples suitably fastened in these positions. The recording instrument gives a reading for each thermocouple every 30 seconds.
3. Two 8-point switches connecting to the recorder.

Thus, for six panels we have a complete record of temperature readings on the inside wall surface and also half way within the panels; that is, half way in between the inside wall surface and the outer metal sheath. In addition to this, we have intermittent thermal readings in the same manner for eight additional panels by means

of two 8-point switches connecting to the two remaining contacts on the recorder. The thermocouples of the additional eight panels were switched in to the recorder manually every three days. The instrument installation is shown at the right of Fig. 1.

### Panels Provide Good Insulation

Of the 14 panels tested, which included the three concrete-cement ratios mentioned above, various vapor barrier compounds, as well as one blank panel with no vapor barrier compound, only minor differences were noted in thermal behavior. Perhaps the unusually mild winter season covered by the period of test may have been a contributing cause to the apparent similarity of the various samples. Fig. 7 gives average results for all the temperature readings. Fig. 8 shows the thermal behavior of the panels from the lowest recorded outside temperature, up to an outside temperature of 50 F. It is interesting to note that on the coldest day of the winter the outside temperature reached — 8 F, at which time the readings one-half way in the panel averaged 45 F, while the inside wall temperatures averaged 58 F. Fig. 7 shows for the season average: outside temperature, 41 F; one-half way in the walls, 62 F; on the inner surface, 67 F.

Most large cities have written into fire codes the re-

quirements which an exterior building wall must meet before it can be approved by the building department. Some city codes have set specifications that a wall must be able to withstand an exterior temperature of 1850 F for two and a half hours without reaching an interior temperature of 450 F.

The curve plotted in Fig. 9 indicates the results of one of two pilot fire tests conducted in the laboratory of Ohio State University to determine the resistance of our curtain wall panels. The four panels tested were 36 x 18 in. in size, and were constructed of ratio 1-4 cement aggregate, in the same manner as those placed in the test building. These panels were joined along the tongue and groove edges of the 36 in. length to form two 3 ft square panels, the joints being cemented with an insulating cement.

In two separate tests made, one with the stainless steel on the exposed side (results shown in Fig. 9) and the other with the concrete on the exposed side, at no time did the temperature reach beyond 395 F, even after five hours of exposure.

We feel that the results obtained from all the testing so far demonstrate that the panels have highly desirable fire-resistant and insulating values, and that they have not appreciably deteriorated during the testing period.

## Wage and Salary Controls for Small Business

ROGER L. PUTNAM, Administrator of the Economic Stabilization Agency, has announced issuance of General Order 17 continuing wage and salary stabilization controls for nine categories of small business enterprises (eight employees or fewer).

Small business firms generally—those employing a total of eight or less persons in all branches—are exempted from wage and salary controls under the recent amendments to the Defense Production Act. However, the Act provides that "the President may from time to time exclude from this exemption such enterprises on the basis of industries, types of business, occupations, or areas, if their exemption would be destabilizing with respect to wages, salaries, or other compensation, prices, or manpower, or would otherwise be contrary to the purposes of this Act."

Under this provision for exclusions, Putnam announced, the following types of small business enterprises will continue under controls:

- (a) Enterprises in which the compensation of one or more of the employees is established on an industry, association, area, or other similar basis, as contained in a master contract or identical contracts, or which follows compensation terms established in such contracts.
- (b) Enterprises in the building and construction industry.
- (c) Enterprises in local and over-the-road (for hire and contract) trucking operations.
- (d) Enterprises employing tool and die (including die sinking) or pattern makers.

- (e) Enterprises in the automotive repair industry.
- (f) Enterprises engaged in logging operations or the operation of sawmills or planing mills.
- (g) All enterprises in the Territory of Alaska.
- (h) New plants in which it is planned or reasonably foreseeable that in excess of eight (8) persons will be employed.
- (i) Enterprises (other than banks, building and loan associations and savings institutions) which derive more than 25 per cent of their business income from dividends, interest, rents or royalties.

Apart from the nine non-exempt categories, any enterprise employing a total of eight or less persons in all branches or units as of July 29, 1952, shall continue exempt from controls until total employment exceeds 15 persons, when it shall be brought under controls.

### Technological Aids to Industry

To acquaint businessmen with the wide range of information available to them, an exhibit of the technical services of the United States Department of Commerce was held at the Conrad Hilton Hotel, Chicago, November 10, 11, 12 and 13.

Included in the exhibit were processes developed by the Bureau of Standards for the armed forces, but which are available for civilian use; commercial products developed from material originated or published by the Office of Technical Services; and data on more than 3,000 government-owned patents which are available for free use. Models of a number of historically important patents were also exhibited.





**SMALL SUPPLY DUCT** fits into space between joists, giving ample head room and a neat appearance



**A STANDARD BOOT** makes the transition from small round duct to the 2 x 14 in. diffuser

## What About Small Pipe Heating?

**Is the small pipe heating system a high velocity, high temperature system? Can it be adapted for summer cooling? Can anybody install these systems, or does the job call for an expert? These and other questions about this controversial subject have been answered recently by the National Warm Air Heating and Air Conditioning Association**

Contractors and others have been asking more questions lately about the small pipe warm air perimeter heating system, and have been voicing their opinions on the subject, both pro and con. They want to know what the system is really like — what its advantages and limitations are.

The National Warm Air Heating and Air Conditioning Association recently has answered some of these questions.

*Question: Is the small pipe system a high velocity system?*

Before we can answer this, we need to set up some limiting value which separates a low or medium velocity system from a so-called high velocity system. This then becomes a matter of opinion — or definition.

In conventional systems air velocities in different parts of the system usually range from 100 fpm up to 300 fpm. In trunk line systems, air velocities of 900 fpm have been considered satisfactory by many competent

heating men for the larger sections of trunk duct. Consequently the usual impression among furnace men has been that a system should not be labeled "high velocity" (for residence use) until it is carrying air velocities beyond 1000 fpm.

In many of the small pipe systems, air velocities in the pipes do not exceed 1000 fpm except for ducts that are quite short and straight where there is very little resistance to air flow.

Thus, if we accept 1000 fpm as the approximate dividing line, a design table for small pipe systems in which the average air velocity is in the neighborhood of 1000 fpm (or less) would not properly be called a high velocity system. On this basis, systems designed according to Association Manual 10 would not be considered "high velocity."

*Question: Isn't a small pipe system primarily a "low-cost system for a low-cost home?"*

Many such systems in the past have been installed in low-cost houses — so have conventional systems. But small pipe systems are being installed by many of the best heating contractors and in many of the best homes.

### **Ties in with Perimeter Heating**

Small pipe heating has tied in wonderfully well with the perimeter heating idea where diffusers are placed along the outside walls either in the floor or in the walls



**TOP TAKEOFF** for small pipe supply provides convenient way to cross the main floor supporting beam

themselves underneath or near to the windows. Many dealers have reported that the small pipe system has made it possible for them to place a greater number of diffusers in a given room — to distribute these diffusers around so as to have one underneath each window — much more conveniently than is practical with a system using conventional pipe sizes. It's true that in some cases, small pipe systems cost less than systems using conventional pipes. But it is equally true that many small pipe systems in the higher price homes may result in a higher total cost for the heating system than if a conventional system were installed. This is due primarily to the use of a greater number of diffusers in each room. According to the dealers who have made the installations, the results have been excellent.

*Question: Can the small pipe system be adapted for summer cooling?*

As yet, the Association hasn't obtained sufficient information to be able to give complete recommendations. However, we do know that a number of combination winter-summer air conditioning systems have been installed using 4 in. round pipe or even smaller size pipe. In these cases additional runs are usually installed for use during the cooling season. These extra runs are then dampered off so that they are not used during the heating season.

*Question: Is a small pipe system a high temperature system?*

There's the opinion held by some heating men that a small pipe system is necessarily one that delivers the air at quite high temperatures. Any system will become a high temperature system if the volume of air being circulated is reduced. Assuming that the furnace is generating the quantity of heat needed by the house, the smaller the volume of air, the less its velocity will be through the furnace and consequently the higher its

temperature will be when it reaches the furnace bonnet. A temperature of 165 deg at the bonnet has been accepted for some years as a very reasonable bonnet temperature and one that yields excellent heating results. Many small pipe systems operate with bonnet temperatures no higher than 165 to 170 deg so they should not be classified as "high temperature" systems.

*Question: Isn't the operation of the small pipe system contrary to the principle of continuous air circulation?*

The experiences of most dealers who have expressed themselves at the Association Indoor Comfort Conferences — dealers who have had direct personal experience with small pipe systems — show that they consider continuous air circulation just as important with a small pipe system as with any other type of duct system. Furthermore, they report that they follow the practice of so adjusting their small pipe systems. Continuous air circulation will stop stratification, will supply heated air to the more distant outlets constantly, and will prevent cold air from accumulating on the floor. The cost of operation will be no greater with continuous air circulation than with intermittent operation.

#### **No Room for "Guesstimates"**

*Question: Since design and installation of small pipe systems is so simple, won't everybody install them, themselves, thus cut into the contractor's work?*

Some heating men have been concerned about the possibility that a small pipe system is so easy and simple to design that a qualified heating man is not needed — that any Tom, Dick or Harry can design and install such a job. This is definitely not true. On the contrary, experience seems to prove that a small pipe system must be even more carefully designed than a system using conventional 6, 7, and 8 in. pipes. Although a small pipe system is, as pointed out above, not necessarily a high velocity system, the air velocities in the ducts are usually higher than those where 6, 7, and 8 in. pipes are used. Consequently there is less leeway for changing air deliveries by damper adjustment with a small pipe system than with a system using conventional pipe sizes. With a conventional system, if one pipe is not delivering as much heat as it should, dampering down the other pipes can increase the velocity in this one duct from, say, 600 fpm up to 700 or 800 fpm and it still remains a relatively low velocity system. But with a small pipe system having air velocities normally of 800 fpm or a little more, there's less margin available in the blower pressure to substantially increase the velocity beyond this point in a pipe which is not carrying the amount of heat that it needs to deliver.

Experience has shown that more care needs to be taken in calculating the heat requirements of the various rooms for a small pipe system than is necessary with a conventional system simply because the system using the small pipes cannot have the heat deliveries changed as much by damper readjustment as is possible with the larger pipes.

# How to Make Stainless Steel Lockers

Ernest E. Zideck  
Sheet Metal Consulting Engineer

Executive offices, laboratories, schools and similar establishments are good markets for stainless steel lockers. Local shops can fabricate the cabinets to advantage, the author states, by using a construction which does not require intricate welding

A LARGE OFFICE recently ordered a number of stainless steel clothes lockers from a dealer in stainless fixtures. However, he could not obtain them from his regular suppliers, who reported that the quantity requested was not large enough to warrant the expense of layout and tooling which would be required.

The office had furnished the dealer with a picture of the cabinet, with pertinent specifications. The material was to be 22 gage stainless steel with a dull finish. The size was 60 in. high, 20 in. wide, and 20 in. deep. The door size was to be 56 in. x 16 in., and the shelf was to be placed 7 in. below the upper door end. Also specified were a hanger rod,  $3\frac{1}{8}$  in. in diameter, to be suspended from the shelf centrally from door to rear; a continuous, stainless steel door hinge; an individual door lock; cabinet top level with the sides; and cabinet bottom set in  $1\frac{1}{2}$  in. In construction, the meeting corners of the door, ledges, top and bottom and corners were generally to be acetylene welded and finished. Spot welding and or bolting of body components were not to show on the outside of the cabinet. The construction had to be rigid, and it was specified that the door must not wobble.

## Sample Closet Made

The dealer consulted a local sheet metal contractor who agreed to make a sample of the clothes closet as specified. The sample cabinet is shown in Fig. 1.

Top and bottom door ledges are 16 in. long, 2 in. wide; vertical door ledges, 60 in. long, 2 in. wide; shelf,  $19\frac{3}{4}$  in. long,  $18\frac{3}{4}$  in. wide; top and bottom, each  $20\frac{1}{8}$  in. square; hinge, 56 in. long; lock insert, 1 in. in diameter, 1 in. deep, and prong 2 in. long; door,  $55\frac{7}{8}$  in. long,  $15\frac{7}{8}$  in. wide. Dimensions are of cabinet height, sides, rear, and parts measured on their outsides.

Approximate material sizes are: sides with lateral door ledges and part of the rear panel, cut  $59\frac{7}{8}$  in. long and 30 in. wide; rear insert, 15 in. wide; top and bottom

ledges cut  $17\frac{1}{2}$  in. long, 4 in. wide; top and bottom each cut 22 in. square; hanger rod cut 22 in. long; shelf cut 23 in. long,  $21\frac{3}{4}$  in. wide; door cut 60 in. long, 20 in. wide.

This sample was approved by the office, and, with the dealer supplying the steel, the contractor's shop proceeded with the job.

## How Cabinet Was Constructed

The sample was constructed as in the plan view, Fig. 2. Sheet 60 in. long and 30 in. wide was braked lengthwise to form the multiple-flanged door ledge, the side to the cabinet and the flanged portion of the rear wall which connects to the back insert panel. The back insert panel is flanged to fit inside of the side walls and their connecting panels, where they are held together by sheet metal screws or are spot welded if space permits. The door ledges are flanged at their ends and spot welded on the inside. This leaves an opening of 16 x 56 in. for the door. The shelf is fastened by sheet metal screws through its downward flanged portion to the inside flanges at the front and rear. The hanger rod is fastened inside of the flanges of the shelf as shown in Fig. 3.

It will be noted in Fig. 4 that the side panel remains flat at the sheet end where it slides into the imitation double seams of the top. The flanged perimeter of the top is notched out for the formation, and as a result, a gap occurs between the edges of the meeting flanges, which is then acetylene welded.

The metal sides where the rear insert slides into the seams are welded along with the edges of the gap. The bottom is welded on the inside of the back insert as well as to the outside panel. This is sufficient for holding the bottom in place.

## Doors Fabricated in New Way

The fabricating of a sheet metal door moving on hinges and locked at only one place is a difficult operation. Sheet metal without internal supports is too thin, even when heavier gages are used, to serve the purpose without being doubled or flanged for reinforcement. The unequal pressures exerted on the metal in forming the reinforcement make the sheet wobble. Locking the door results in one of its corners not closing tightly. Where the reinforcement is channel-like, neither the press brake, the common brake nor a pan brake can form the narrow

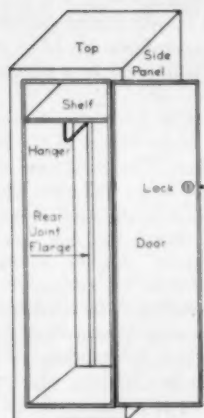


FIG. 1 — HERE IS the sample closer

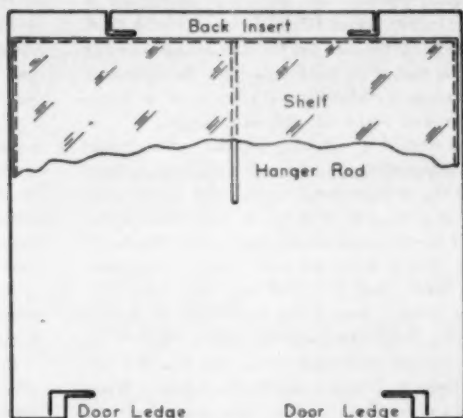


FIG. 2 — THE LOCKER was constructed as shown in this plan view

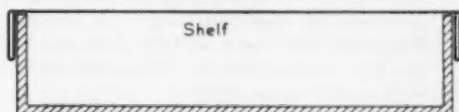


FIG. 3 — THE HANGER rod is fastened inside the flanges of the shelf

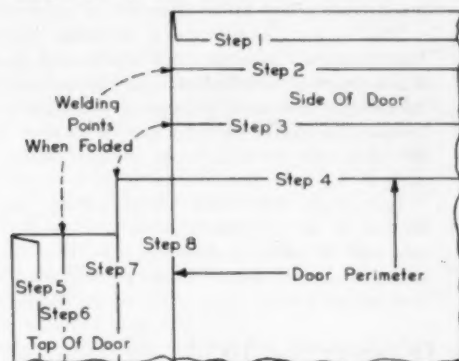


FIG. 5 — MULTIPLE METAL bending is needed for making a rigid door of this size. This layout shows one of the door corners notched out, doubled up metal, and three bends

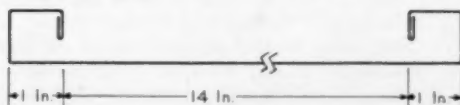


FIG. 6 — FOR FORMING the door, the 180 deg folding of the metal was done on all four sides first. Then the long sides were completed as shown here

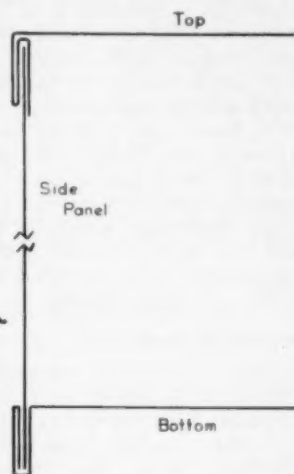


FIG. 4 — HOW TOPS and bottoms are welded

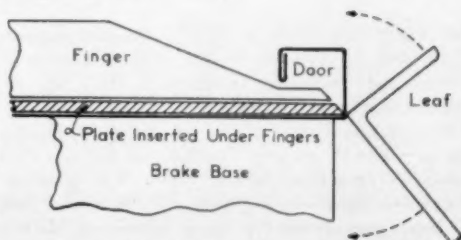


FIG. 7 — HERE SHOWN is braking of the short door sides. Portions of the plate which is fastened to the bottom of the fingers protrude at the side

corners without hemming the metal and causing it to stretch in the corner, which forces the metal out of level. Where the corner is notched out for the diagonal meeting of metal edges, even if the welding is done after clamping in a jig or on a level surface, it will often break or bulge, returning the door to its out-of-level position.

The newer method of notching out and welding door corners was adopted in the fabrication of these lockers. Fig. 5 shows the multiple metal bending that is necessary for rigidity of a door 56 x 16 in. in size. This layout shows one of the door corners notched out for the bending process. A side is formed first. Step 1 is to make the 180 deg bend. Step 2 is a 91 deg bend, step 3 another 91 deg bend. Step 4, the final bend, is also 91 deg. (See Fig. 6 for the complete view.) Step 5 involves either the top or bottom of the door and is a 180 deg bend. Steps 6, 7 and 8 are 91 deg bends. When the two edges come close together they are pulled into position and welded across the seam.

The old practice was to cut out the metal for a mitre, with metal edges meeting diagonally across the reinforcement. Visualizing the completed forms of both the long and the narrow sides, we see that the cut edges of the metal meet in a zigzag fashion, providing a greater surface for the welding to secure the two ledges.

This zigzag notching of the corner provides more welding surface and the deeper cutout in the long side helps to avoid metal hemming when the final bends are made. The cutouts are made 1 1/2 in. past the corner lines, so that when the bends are made, the metal edges will meet loosely, with a gap between them suitable for welding. The newer cutout here illustrated is made to allow the long sides to be braked up to 91 deg without interfering with the narrow sides being so braked.

#### Metal Disfigurement Avoided

To make the final bend possible along the entire width of the formed narrow side and thereby avoid metal disfigurement in the flange, which would occur if the bend were made in the ordinary manner, certain brake modifications must be made. The shop used a standard pan brake and a number of "fingers" were aligned in it to

a 14 in. braking length, shown in Fig. 7. The fingers, extending only 14 in., left 1 in. at each side for the long sides formed. If braked over the 14 in. of finger blades only, the bend would result in a disfigurement of the door.

Fig. 7 shows a 1/8 in. thick plate, 8 in. wide and 153/4 in. long, fastened to the bottom of the fingers and protruding at the sides. The front edge of the plate is beveled like a brake blade. Its other edges are filed in order to avoid scratching the metal of the door. As the brake fingers are thicker than the opening below the first flange and would disfigure the flange, they are ground off as needed for the operation. This does not detract from their usefulness for other work. Thus Fig. 7 shows the modification necessary for this braking.

In forming the door, all 180 degree bending of the metal was done on all four sides first. Then the long sides were completed as shown in Fig. 7. The door was then inserted through the brake and the narrow sides were braked in the proper succession of steps. The door was then clamped into a jig and placed on a level bench. The edges of the corners were first spot welded to hold them together, then each corner was completed. The door remained in the jig until all welding was finished to avoid its getting out of shape by having different pressures exerted against it.

A continuous hinge was specified to be used and was spot welded to the door. The other side of the hinge was secured to the cabinet ledge by small, flat-headed screws, countersunk in the hinge lip.

This cabinet construction is obviously less costly than a fully welded construction which would require a heavier gage of steel and much more butt welding — an intricate and often a disastrous operation on thin metals. The rear of the cabinet is hidden from view in the office, and so becomes the pieced section of the locker.

The use of stainless steel individual lockers may well increase in demand, but in numbers too small to warrant mass production in factories. Thus the sheet metal shop has another service it can perform for old and new customers.

## ASHVE Nominates Officers for 1953

THE NOMINATION of Reg F. Taylor, consulting engineer of Houston, for president of The American Society of Heating and Ventilating Engineers in 1953, was announced recently by the Society.

Other nominees are: first vice president, L. N. Hunter, vice president of research, The National Radiator Co.; second vice president, John E. Haines, vice president, Minneapolis-Honeywell Regulator Co.; treasurer, John W. James, vice president in charge of research, McDonnell & Miller, Inc.

Those nominated for three-year terms on the Council, ASHVE governing body, are: Irwin W. Cotton, president of the I. W. Cotton Co.; Arthur W. Edwards, district manager, The Trane Co.; Bruce L. Evans, owner-man-

ager, Bruce L. Evans Co.; Leon T. Mart, president, The Marley Co.; and E. R. Queer, director of the Department of Engineering Research, The Pennsylvania State College.

Nominees for three-year terms on the Committee on Research are: Richard S. Dill, chief, Heating and Air Conditioning Section, National Bureau of Standards, Washington, D. C.; Frank H. Faust, manager, Trade Relations, Air Conditioning Department, General Electric Co.; Robert W. Keeton, M.D., Chicago, retired head of the Department of Internal Medicine, University of Illinois; Harold A. Lockhart, chief engineer, Bell & Gossett Co.; and John W. McElgin, vice president in charge of engineering, John J. Nesbitt, Inc. For a one-year term: Arthur J. Hess, Hess-Greiner & Pollard.



# Making a Two-Way Transition Elbow

**Hugh B. Reid**

**Instructor, Sheet Metal Pattern Drawing**

**How should you make a two-way branch at the end of a main air distribution duct? The solution given here is simpler than other methods used, because the fitting is symmetrical about the vertical center line and straight on one side**

A COMMON PRACTICE in designing air distribution duct systems is to run a main duct from the air handling unit through the center of the space which is to be conditioned. From the main duct, branch ducts are connected to suit the location of the various rooms and offices. When a two-way branch is required at the end of the main duct, the problem presented on the pattern page is the practical solution.

When sizing the ducts, consideration must be given to the type of air diffuser being used, which will vary depending on conditions such as ceiling height and radius of diffusion.

Fig. 6 illustrates diffusers installed in an acoustical ceiling in a private office which has a 9 ft ceiling height and a 14 ft radius of diffusion. A 10 in. neck diameter diffuser with an 800 fpm velocity will be required for a room with these dimensions. Assume that the room requires 300 cfm. Thus, 300 cfm volume divided by 800 fpm velocity equals approximately 60 sq in. The diffuser neck is 10 in. in diameter. Thus, 10 in. plus 2 in. equals 12 in., and 12 in. divided into 60 sq in. equals 5 in. The branch sizes required for a volume of 300 cfm at 800 fpm velocity with a 10 in. diameter neck diffuser will be 12 in. by 5 in.

Analyzing the pattern problem, Fig. 1 shows that the fitting is symmetrical about the vertical center line and Fig. 2 shows that the fitting is straight on one side; therefore, all the true length lines can be developed from the half front view drawing.

Next, it will be noted that lines 5-5', 6-6', 7-7', and 8-8', on Fig. 3 are identical in length to lines 1-1', 2-2', 3-3', and 4-4', on Fig. 4. Thus, lines 5-1, 6-2, 7-3, and 8-4, on Fig. 1 are true length lines and the rise distance marked E is the same for lines 1-6, 2-7, and 3-8.

This simplifies the layout problem and produces a more efficient branch fitting than a similar fitting developed by the three point method which was discussed in the July 1952 issue of American Artisan.

Note that the triangle 1-1-5, on Fig. 1 is a true triangle. This will permit the operation of a splitter damper

which will result in a controlled distribution of air to both branch ducts.

Following is a step by step solution of the pattern problem:

## **To Construct Half Front View Drawing Marked Fig. 1**

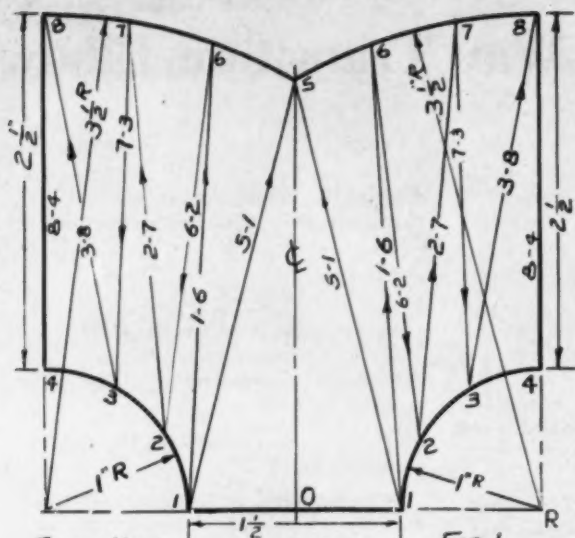
- (a) Draw the  $\frac{3}{4}$  in. horizontal line. From point 0, draw the line marked CL perpendicular to line 0-1'.
- (b) Working from point 1 measure 1 in. and mark the point R. With point R as center and radius of 1 in., draw a 90 deg arc and mark the point 4.
- (c) Through points R and 4 draw an extended line. From point 4 measure  $2\frac{1}{2}$  in. and mark the point 8.
- (d) With R as center and R-8 as radius, draw an arc to intersect the center line 0-5.
- (e) Divide the 90 deg arc into three equal spaces and mark the points 1, 2, 3, 4.
- (f) Divide arc 5-8 into 3 equal spaces and mark the points 5, 6, 7, 8. Draw lines 5-1, 1-6, 6-2, 2-7, 7-3, 3-8, 8-4.

## **To Layout the Back Pattern Marked Fig. 3**

- (a) Draw a horizontal line. On this line establish the point 8.
- (b) With a flexible rule, measure arc 8-5-8, on Fig. 1, and transfer these distances to the horizontal line on Fig. 3.
- (c) Through points 8, 5, 8, draw lines perpendicular to line 8-8.
- (d) From point 5, measure  $1\frac{1}{2}$  in. and mark the point 5'. From points 8, measure  $\frac{1}{2}$  in. and mark the points 8'.
- (e) Draw lines connecting points 5' to 8' and 8 to 8'.
- (f) Divide line 5-8 into three equal spaces and through the points draw lines perpendicular to line 5-8 and intersecting line 5'-8' at points 6' and 7'.

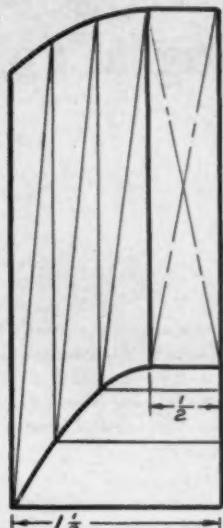
## **To Layout the Throat Pattern Marked Fig. 4**

- (a) Calculate the length of the 90 deg arc by multiplying the given radius by the constant 1.57. Thus, 1 in. multiplied by 1.57 equals 1  $\frac{9}{16}$  in.
- (b) Draw a 1  $\frac{9}{16}$  in. horizontal line, divide this line into three equal spaces, mark the points 1, 2, 3, 4, and through the points draw lines perpendicular to line 1-4.
- (c) From point 1, measure vertically  $1\frac{1}{2}$  in. and

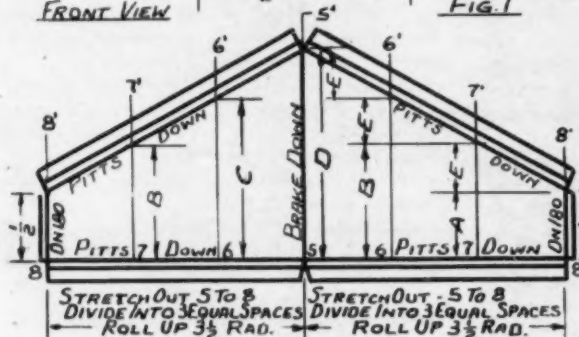


FRONT VIEW

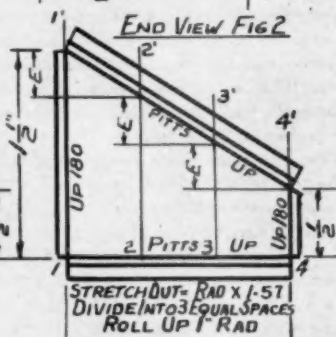
FIG. 1



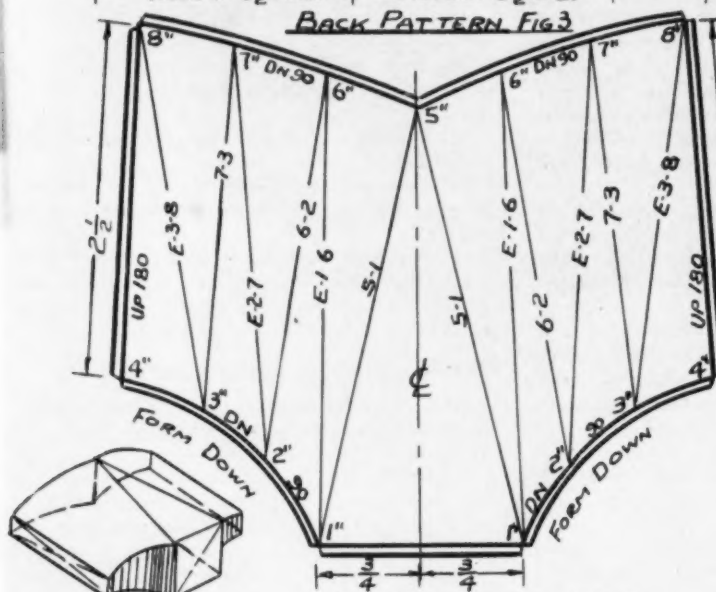
END VIEW FIG. 2



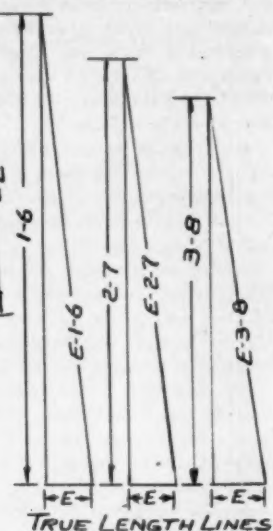
BACK PATTERN FIG. 3



THROAT PATTERN FIG. 4  
RIGHT - 1 LEFT REQ'D



TOP PATTERN FIG. 5



TRUE LENGTH LINES

PATTERN LAYOUT for making a two-way branch at the end of a main air distribution duct

mark the point 1'. From point 1, measure vertically  $\frac{1}{2}$  in. and mark the point 4'. Draw the line 1'-4' and mark the points 1', 2', 3', 4'.

### To Layout the Top Pattern Marked Fig. 5

(a) Draw the  $1\frac{1}{2}$  in. horizontal line marked 1'-1". With line 1-5 on Fig. 1 as radius and points 1", 1", on Fig. 5 as centers, draw intersecting arcs and mark the point 5".

(b) Draw a right angle. From Fig. 1, measure line 1-6 and transfer this to the vertical leg of the right angle. From Fig. 3 measure distance E and transfer this to the horizontal leg. The hypotenuse marked E-1-6 is the true length line.

(c) With points 1" on the layout as centers and radius E-1-6, draw arcs. With distance 5'-6', on Fig. 3 as radius and point 5" on Fig. 5 as center, cut the arcs and mark the points 6".

(d) With line 6-2 on Fig. 1 as radius and points 6" on Fig. 5 as centers, draw arcs. With distance 1'-2' on Fig. 4 as radius and points 2" on Fig. 5 as centers, cut the arcs and mark the points 2".

(e) Transfer length 2-7 on Fig. 1 to the vertical leg of a right angle and distance E on Fig. 3 to the horizontal leg. The hypotenuse E-2-7 is the true length line. From points 2" on Fig. 5 as centers and radius E-2-7 draw arcs. With distance 6'-7' on Fig. 3 as radius and points 6" on Fig. 5 as centers cut the arcs and mark the points 7".

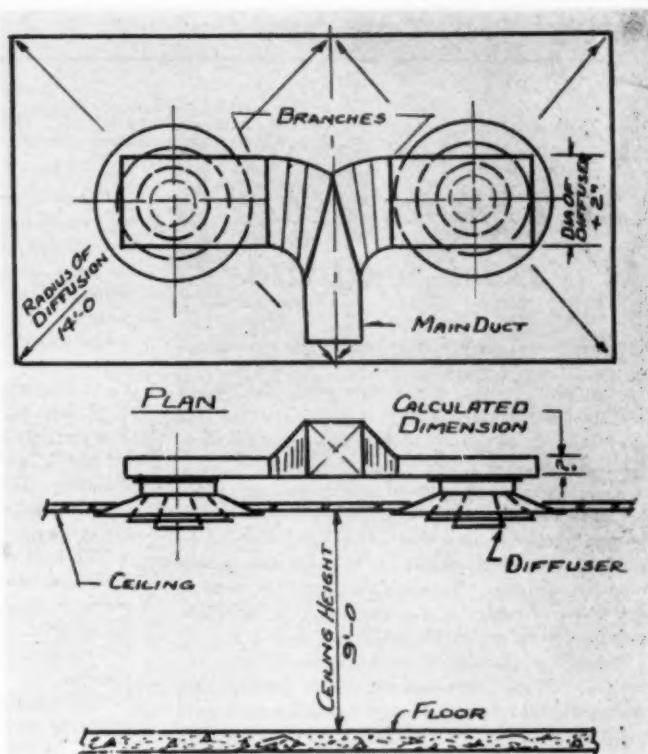
(f) With line 7-3 on Fig. 1 as radius and points 7" on Fig. 5 as centers draw arcs. With distance 2'-3' on Fig. 4 as radius and points 2" on Fig. 5 as centers cut the arcs and mark the points 3".

(g) Draw a right angle. From Fig. 1 transfer line 3-8 to the vertical leg. From Fig. 3 transfer distance E to the horizontal leg. The hypotenuse marked E-3-8 is the true length line. With points 3" on Fig. 5 as centers and line E-3-8 as radius draw arcs. With distance 7'-8' on Fig. 3 as radius and points 7" on Fig. 5 as centers cut the arcs and mark the points 8".

(h) With line 8-3 on Fig. 1 as radius and points 8" on Fig. 5 as centers draw arcs. With distance 3'-4' on Fig. 4 as radius and points 3" on Fig. 5 as centers cut the arcs and mark the points 4".

(i) Through the developed points draw the pattern outline.

**Note:** The Front View Drawing marked Fig. 1 is the pattern for the straight side. Allowances for the seams



and joints should be added before the pattern is cut. No special sequence of assembly is required for the fabrication of the various patterns into the final fitting.

Careful consideration in the planning of transition elbows will help to reduce the friction caused when air is bent around a corner. An increase in friction is frequently responsible for an excessive loss in the volume of air to be delivered to a specific area.

### Galvanized Sheet Expansion Goals, 1953-54

A RECENT RELEASE from the Defense Production Administration announces that the expansion goal for electrolytic tin plate has been set at 4,100,000 net tons of annual capacity by January 1, 1955. This provides for an increase of 1,300,000 net tons over the annual capacity of 2,800,000 net tons on January 1, 1950, according to the Administration.

The goal for continuous galvanized sheet and strip facilities has been set at 1,300,000 net tons capacity by January 1, 1954. This provides for an increase of 700,000 net tons over the 600,000 net tons capacity existing on January 1, 1950.

# What Do You Say?

*You are invited to express your views — for publication here — on matters of interest to those concerned with residential air conditioning, warm air heating and sheet metal contracting. Address comments to Editor, American Artisan, 6 N. Michigan Ave., Chicago 2*

## Can I Stop Leakage At a Dust Separator?

RECENTLY WE RECEIVED this letter from one of our readers:

"We have installed a dust collector at one of our local quarries. The purpose is to collect the lime dust which can be sold and at the same time make the working conditions more desirable.

"The customer is well-pleased with the collector, which was made according to tables published in your booklet *Correct Practice in Industrial Sheet Metal Work*.

"There is a small amount of dust that still escapes from the separator. We would like your advice as to what to do to catch this dust or to prevent the escape from the present separator.

"Would the addition of another separator solve the problem? If so, how would the two be joined." We have received the following answers to this controversial question:

EDWARD P. PUHL, Puhl & Hepper Mfg. Co., Inc.

"If one of your readers who has a collector that is collecting lime dust claims that a very small amount of dust is escaping, he certainly has a very good separator, for there is not a separator made that will not dust, especially with lime dust. As far as using two collectors goes, I don't think he will gain anything."

ALFRED B. HARD, Agat-Detroit Co.

"We are interested in doing anything we can to help solve the problem of the quarry which has a collector that is doing a good job with the exception of a small residue which needs to be handled.

"We suspect that this small amount that still escapes is some of the extremely fine dust which may not be able to be separated out in any cyclone and may require some after-cleaner."

ROY P. WARREN, Buffalo Forge Co.

"If this cyclone collector is a well-designed common cyclone we would expect that the material which is escaping is under 20 microns in size. Under these conditions it would be possible to put another 'high efficiency' multi-cyclone in series. You could probably catch approximately 60 to 70 per cent by weight of the material escaping. If you follow this procedure the outlet of the existing unit would simply be piped to the inlet of the supplemental unit and then the units would work in series.

"There is a more positive way of capturing the material which is now escaping and that would be to use a hydraulic scrubbing tower, which unit is more efficient on fine dust than cyclones or multiple cyclones. While there has been considerable improvement in the performance of 'high efficiency' multiple cyclone units, the overall effectiveness of properly designed scrubbing units is greater."

G. C. ZILLOTTO, Dust Suppression & Engineering Co.

"Because the dust has commercial value in a dry state, it is perfectly proper to install a cyclone, but if a clear exhaust is wanted, a secondary dust collector whose collecting efficiency is higher than that of a cyclone should be added to the system on the discharge side of the cyclone.

"We have several such installations which work perfectly satisfactorily. The same fan can be used, but the power required will be larger by the amount of air flow resistance the additional piping and the secondary collector cause. The motor, therefore, may have to be changed.

"The connection between the two collectors does not ordinarily present any difficulty if space is available. The outlet from the cyclone is piped to the inlet of the secondary collector. If the fan is at present located ahead of the cyclone, it can remain where it is. If it is located on the discharge side of the cyclone, it can still remain where it is, or it can be moved to pull the air through both the cyclone and the secondary dust collector.

"We have used all three types of arrangement, and although we prefer the last one, all work satisfactorily."

JOHN M. KANE, Dust Control Div., American Air Filter Co., Inc.

"From the letter, I am almost certain that the collector employed is a dry type centrifugal unit. If this is the case, the addition of a second separator in series with the present unit will give a disappointing degree of additional collection. While some material will be collected, the problem of the discharge settling in the area will not be abated. It is axiomatic in our industry that two collectors of the same order of effectiveness cannot be placed in series and obtain any practical increase in overall effectiveness.

"Cleaning up the discharge from the present collector is going to take a high efficiency type of collector or fabric arresters."

There seems to be a number of ways in which this problem can be overcome. If you have been faced with a similar problem, why not write and tell us about your solutions.

Customers form an impression of a shop — sometimes their only impression — from the men who call to make installations or do repair work. It is important, then, for these service men to be both courteous and neat. Recognizing this, a Philadelphia heating and sheet metal shop promoted a contest which raised standards among the men, and paid off in customer good-will

BOTH MEN CALLING on this customer are neat. Note the drop cloth one of them carries



## Courtesy Pays Off in Good-Will

by Phil Lance

IN AN EFFORT to impress service men with the importance of on-the-job courtesy and cleanliness, a large Philadelphia heating and sheet metal shop decided to promote a contest. The Henry Ford Co. contest was intended to let the public know that the firm was trying to give the best in installation and servicing operations, as well as to raise standards among the men.

The contest was run for a period of 30 days. The firm mailed a postcard to every customer visited during the month, either for installation work or servicing. This card explained that the firm was conducting a courtesy and neatness campaign among its employees, and that prizes were going to be awarded the men who had the best record.

The customer was told that if he felt the service man ought to be complimented on these two qualities, he should mail a letter, on his own stationery, to the company. This procedure was felt to be better than enclosing a postcard with a letter of explanation, or using a double folding card, since customers wouldn't be "pressured" into making a reply, a personal reply would show real interest, and letters on personal stationery could be used in promotional pieces for direct mailings, newspaper advertising, and on radio.

Service men, who were, of course, told about the cards, simultaneously explained the contest to the customer. This served a two-fold purpose. First, the men assigned to the job carried out their share of courtesy and neatness to make a good impression on the customer. Next, making the customer aware of these facts through the men promoted considerable good-will, and made it more probable that letters would be sent.

This campaign was backed up with spot announcements on the company's regular radio programs and also in newspaper advertising. Thus, the public as well as customers were made aware of it.

During the month, the firm mailed out 300 postals to customers. Every day the replies streamed back, and 115 complimentary letters were received.

### Point System Used

Each service man was judged on the basis of points for this contest. There was an important reason for this. It is possible for a team of two men making service calls to make up to six visits a day, and for a team making a heating installation to spend two and a half days on one job. Thus, the team making more calls had the possibility of getting more complimentary letters.



In order to balance this contest, a scale of one point per hour of work was worked out. The system was based on eight hours a day, divided among the calls made by each team, or man, with a point being given for every hour spent in the home of the customer who mailed in a letter.

If, for instance, a team spent two and a half days on a job, and received a letter, it received 20 points. If a team made six calls a day and received six letters, it was credited with eight points for the day. If this team received three letters, four points were given, etc. This made everything equal, regardless of the assignments that each team had.

### Helpers Also Get Credit

The firm employs helpers who are often interchanged among the regular men to help out on specific jobs. This contest, therefore, was extended to cover the helpers. They received the same number of points as the regular men when they worked with them on jobs.

To simplify this point system, a card record, using 3 x 5 in. cards, was set up. Every regular man had a card. When he was assigned a job, it was recorded, as was the name of the helper. If the helper was assigned to another job afterwards, his name was placed on the next regular serviceman's card.

As complimentary letters came in, the points were recorded on the regular service man's record, and the same number was recorded on the helper's card (a separate batch was made up for helpers.) Thus, no matter when a customer wrote in, the proper service man and helper got full credit, even though they weren't still working together as a team.

Each regular mechanic and helper having the most



MEN HAVE TRAINING session on how they should look when calling on customers

points was awarded a \$25 cash prize. In an effort to keep interest high during the contest, a special chart was made which kept a record of the five leading men, on a daily basis. It was a graph with five steps labeled, *Grumpy*, *Lightnin'*, *Tidy Tim*, *Ole Smoothy*, and *Champ*. Those men not in the first five weren't posted at all.

This campaign did away with a lot of lecturing to the men on the subject of courtesy and neatness. It made them conscious of the importance of these qualities in a practical way, and it created good-will on the part of the firm's customers as well as hundreds of its prospects.

### Use Vapor Barrier with Crawl Space Heating

IN 1941 THE DIVISION OF FOREST PATHOLOGY initiated a study of houses without basements in the vicinity of Washington, D. C., to determine the decay hazards to wooden substructures, and to devise practical methods of decreasing them. Abundant ventilation of the crawl space was known to be a safeguard, but because of chilling of floors, homeowners in the North commonly closed vents in winter, just when condensation occurs most.

All wood decay fungi, including those that caused the so-called "dry rot", need a water supply. An effort was made, therefore, to cut off this supply. It was found that this could be effectively done by covering the soil under the house with roll roofing. This kept soil moisture from vaporizing into the crawl space air and the wood became too dry to decay.

During the first years of the test, the crawl spaces under these houses had very little ventilation, and since 1944, none at all. Condensation has not been observed in the crawl spaces with soil cover at any time and the sills have continued to be too dry for decay. In the wet site units that were without soil cover there was visible condensation during most of each winter and by 1947 indications of decay were so common that these units

had to be taken out of the test.

In these particular tests, no heat was introduced into the crawl space. When heated air is supplied to the crawl space as is the case with the warm air plenum system, or the ducted perimeter systems, the need for proper vapor barrier becomes even more acute. This is because warm air can carry more moisture than cool air and will try to absorb any moisture it can from the earth surface. Therefore, the floor of the crawl space must be treated so that heated air will never be in contact with moisture-laden surfaces.

There are several acceptable and effective ways for providing this protection outlined in *Manual 4 — Warm Air Perimeter Heating*, published by the National Warm Air Heating and Air Conditioning Association. One is to place a moisture membrane upon the earth and pour a two-inch concrete slab over it. Another treatment is to place a four-inch layer of a coarse aggregate fill upon the ground surface and cover it with a moisture-proof membrane. The entire surface of the moisture membrane may then be covered if desired with two inches of washed gravel or its equivalent, according to a University of Illinois bulletin.

# YOUR BUSINESS AND THE LAW

## What You Can't Say About Competitors

Albert W. Gray

Any contractor has a right to tell prospective customers about the "superiority" of his products. But if he begins to discuss the "inferiority" of his competitor's products, he may be crossing that important line marking slander.

THE ADVERTISING of a manufacturer of air cooling equipment asserted that the machines of this company would operate at least 40 per cent more cheaply than those of other manufacturers of similar products; that power costs were approximately 50 per cent less than incurred in the use of the equipment of other manufacturers of this type of goods; that every new and advanced engineering principle had been developed by the engineers of this manufacturer and that "On account of leading in this field the company has grown by leaps and bounds so that today it is the recognized authority in this particular field."

"It is surprising that large national concerns will call their development a 'scientific triumph of their engineering laboratories' when not one new idea has been added to the old ice idea except the application of machinery."

Based on these statements seeking to discredit and injure competitors, an action was brought in this instance by the Federal Trade Commission. There the commission asserted that the use of these false, misleading and exaggerated statements and representations and the false, defamatory and disparaging statements in reference to competitive products misleads the public.

### Slander is Unfair Competition

As a result, the Commission here alleged, trade has been unfairly diverted to the user from its competitors to the injury of both competitors and public and that the aforesaid acts and practices "constitute unfair and deceptive acts and practices in commerce and unfair methods of competition within the meaning and intent of the Federal Trade Commission Act."

As a consequence of this action a cease and desist order was issued prohibiting such or similar advertising statements, with the further provision that this advertiser,

within 60 days, file with the Commission a report detailing its compliance with the order.

As an instrument in the enforcement of this law the Federal Trade Commission is comparatively new but the law itself is old, both in this country and in England.

### Cannot Impute Fraud

A manufacturer over-zealous in stifling its competition, published the following statement about a competitor:

"They are said to be striving hard now to unload these machines onto agents and dealers without restriction as to price so as to be free to put out the newer style. This is being accomplished so slowly that their shop force has been very much reduced and the shops have been closed down altogether several alternating weeks, which plan will likely be continued during the summer. It will certainly be of interest to their agents and prospective purchasers of their machines to learn that they are having unloaded onto them a type of machine that is being abandoned by its manufacturers as inferior and too poor to remain on the market."

The decision of the action brought by this competitor closely follows that of the Federal Trade Commission which silenced disparagement of this type with its cease and desist order. Here the Supreme Court of the state said,

"Language which imputes to one fraud or want of integrity in his business is in itself ground for action. Any charge of dishonesty against a party in connection with his business whereby his character in such business may be injuriously affected is here held to be ground for a damage action against whomever publishes such statements."

### Injury to Good Will is Property Injury

The injury to public confidence and good will enjoyed by a competitor is as essentially an injury to his property as the destruction of his plant or of his goods themselves. A dealer is free under the law to praise his own products but he may not stimulate his trade by decrying the goods or business practices of his competitors through false and disparaging statements to the trade.

"The rule to be deduced from these cases and one which has most ample support," asserted a court in its decision of a case involving circumstances of this character, "is that while a trader may lawfully engage in the

Albert W. Gray, author of this article, has had twenty years experience as an attorney in the courts of New York City. He has written widely on legal matters and is the author of "The Family Legal Advisor".

sharpest competition with those in a like business by holding out extraordinary inducements, by representing his own wares to be better and cheaper than those of others; yet when he oversteps that line and commits an act with the malicious intent of inflicting injury upon his rival's business, his conduct is illegal and if damages result from it the injured party is entitled to redress. Nor does it matter whether the wrongdoer effects his object by persuasion or by false representation. The courts look through the instrumentality or means used to the wrong perpetrated with the malicious intent and base the right of action upon that."

In this case a woman had been engaged in business securing her stock in trade entirely on consignment. By false representations of the woman's character and credit, competitors influenced her consignor to withdraw the only source of supply the woman had for her goods with the consequent collapse of her business.

"The general principle is that in all cases where a man has suffered loss or damage through the wrong of another he may have an action to be repaired in damages," said the court. "The intentional causing of such loss to another without justifiable cause and with malicious purpose to inflict it, is of itself a wrong."

This case was decided many years ago, yet only recently that court decision was followed in a case in the same state in which was summarized this principle that has so long endured in the law.

### Citizens' Rights Involved

"The common law has long recognized as part of the liberty of the citizen the right of every man to engage freely in such lawful business or occupation as he himself may choose, free from hinderance or obstruction by his fellow men, saving such as may result from the exercise of equal or superior rights on their part; such for instance, as the right of fair competition in a like field of human effort and saving, of course, such other hinderance or obstruction as may be legally excused or justified.

"This right is declared by our Constitution to be inalienable. The first section of the Bill of Rights sets forth that, 'All men are by nature free and independent and have certain natural and inalienable rights, among which are those of enjoying and defending life and liberty, acquiring, possessing and protecting property and of pursuing and obtaining safety and happiness.'"

Recently there came before an appellate court in the same state an action by a manufacturer against a competitor for damages. It was asserted that the competitor had disparaged the manufacturer by false statements to customers and to the trade generally, stating that the product of the company was defective, the company financially unsound, one of its officers a "crook" and the company incapable of producing the goods it was manufacturing and placing on the market since it had insufficient funds for the completion of a factory it was then building and that no credit should be extended the company because of its economic instability.

The court, holding the manufacturer who was the ob-

ject of this attack entitled to damages for these injuries to its business and good will, reaffirmed this law that had been asserted by the courts in that state half a century before.

"Certainly the courts of this state recognize that one's right to pursue a lawful business is a property right; that one is entitled to protection against undue molestation or unlawful or malicious interference with one's legitimate business and for a violation or material interference with such rights damages may be had."

### Can Assert Superiority of Own Goods

An outstanding legal authority asserts in relation to this law against competitive disparagement, "Generally the publication of any false and malicious statement which tends to disparage the quality, condition or value of the property of another and which causes him special injury or damages, is ground for the imposition of damages."

To this is added the qualification, "But statements amounting to no more than the assertions by one tradesman that his goods are superior to those of his rival, as distinguished from statements as to the quality of the goods or products of another, are not grounds for the recovery of damages in an action against whoever may be responsible for them."

A summary of this law imposing a liability in damages for the disparagement of either the goods of a competitor or of the character of the competitor himself, was recently set out in a decision of another state's supreme court.

"One who without a privilege to do so publishes matter which is untrue and disparaging to another's property, in land, chattels or intangible things under such circumstances as would lead a reasonable man to foresee that the conduct of a third person as purchaser thereof, might be determined thereby, is liable for a pecuniary loss resulting to the other from the impairment of the vendibility thus caused.

### Results — Not Motives — Count

"One who publishes matter disparaging to another's property in lands, chattels or intangible things is subject to liability although he (a) did not intend to influence a third person's conduct or purchaser of the thing in question, (b) neither knew nor believed the disparaging matter to be false, (c) did not publish such matter from ill will toward the other or a desire to cause him loss.

"One who, without a privilege to do so, publishes an untrue statement of fact which is disparaging to the quality of another's land, chattels or intangible things, under circumstances which would lead a reasonable man to foresee that the conduct of a third person as purchaser thereof, would be determined thereby, is liable for a pecuniary loss resulting to the other from the impairment of the vendibility so caused."

*[Note: While this discussion applies to actual cases, it should be remembered that legal rules vary in different states.]*

**Southern  
Methodist  
University  
DALLAS, TEXAS**



**ANOTHER CASE OF**  
***Copper***  
**WHERE IT COUNTS**

"Building to endure," invariably means, "Building with copper." Not only does copper endure for scores and scores of years, but it needs practically no maintenance while turning in its marathon performance. That's why architects and builders prefer to specify it.

Sheet metal contractors like it because it is so readily worked and soldered. And when installed as recommended in Revere's booklet, "Copper and Common Sense," customer satisfaction is assured and the prestige and reputation of all concerned are protected.

Such was the case of the buildings which comprise the Theological Quadrangle at Southern Methodist University. The gutters were made of 24 oz. Revere Sheet Copper, each section being made from three 8-ft. lengths, riveted and soldered together with 24 ft. between expansion joints.

Now, with restrictions eased, and quantities permissible without allotments greatly increased, there isn't any reason why your next job can't have the many benefits of Revere Copper. See the Revere Distributor nearest you about Revere Sheet, Strip or Roll Copper for flashing. Particularly ask him about the money-saving advantages of Revere Keystone Thru-Wall Flashing.\* And, if you have technical problems, he will put you in touch with Revere's Technical Advisory Service.

\*Patented

**REVERE**

**COPPER AND BRASS INCORPORATED**

*Founded by Paul Revere in 1801*

230 Park Avenue, New York 17, New York

Mills: Baltimore, Md.; Chicago and Clinton, Ill.; Detroit, Mich.; Los Angeles and Riverside, Calif.; New Bedford, Mass.; Rome, N. Y.;  
Sales Offices in Principal Cities. Distributors Everywhere

SEE REVERE'S "MEET THE PRESS" ON NBC TELEVISION EVERY SUNDAY



LASTING, NON-RUSTING REVERE 16-OZ. COPPER covers the dormer roofs of the buildings in the Theological Quadrangle of Southern Methodist University.

NOTE WORKMEN—putting prefabricated 24-oz. Revere Copper Gutter sections into place. Installation was made in accordance with Revere's recommendations in the booklet, "Copper and Common Sense."



CLOSE-UP OF EXPANSION JOINT before capping. Joints were placed 24 ft. apart. The fascia copper leading from the upper, outer edge of the gutter over the masonry cornice, was 16 oz. Revere Lead Coated Copper. 68,000 lbs. of Revere Copper was used on the entire Quadrangle project of 7 buildings. Architect—Mark Lemmon, Gen. Cont.—Henger Construction Co. Sheet metal contractor—American Sheet Metal Co. Revere Copper furnished by Moncrief-Lenior Mfg. Co., all of Dallas, Texas.

Choice of  
sheet metal  
workers  
because

# WISS METAL-MASTER SNIPS

cut  
better,  
faster,  
easier!

## WHO BUYS WISS METAL-MASTER SNIPS AND WHY

### Who:

All Purchasing Agents, Contractors and Professional Sheet Metal Workers who put *quality* first.

### Why:

The compound action of Metal-Masters delivers amazing cutting power. These 10" snips cut with about *one-half* the effort required for standard 12½" snips. Hot drop forged of molybdenum alloy steel, fitted with nickel chrome molybdenum bolts for toughness and durability. One edge serrated to prevent slipping.

The complete set of 4 patterns illustrated will easily handle almost any cutting requirement . . . straight, scrolls, circles or the most intricate designs. Small, light, easily carried in pocket.

**NEW M-5 BULLDOG HEAVY DUTY SNIPS.** For notching, nibbling and cutting shallow arcs in sheet metal as heavy as 16 gauge. The powerful compound action easily handles the tougher notching usually done by heavier, longer-handled snips. Only about 9" long, with a 7/8" cut, they are practically indispensable for heavy gauge metal work.

*Quality for more than a Century*

**J. WISS & SONS COMPANY • NEWARK 7, N. J.**





# A Bigger Line for Bigger Sales and Bigger Profits!

## The New TIMKEN Silent Automatic Gas Furnace Line!

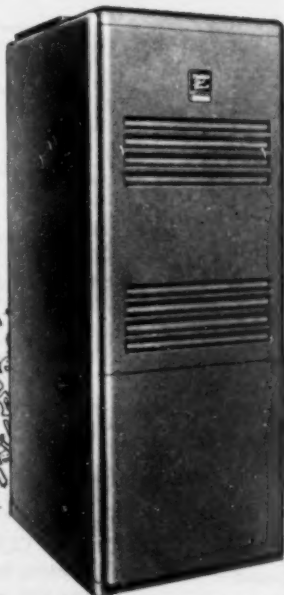
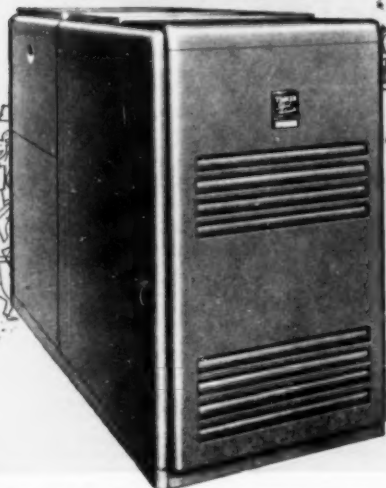
**NEW ENGINEERING! NEW STYLING!  
NEW SALES OPPORTUNITIES!**

There's sure-fire sales opportunity ahead for Timken Silent Automatic Dealers! It's the all-new, feature-packed gas furnace line—one of the finest, most complete lines of gas-fired furnaces ever offered by one manufacturer!

These furnaces have everything! Spanking new and good looking, they're competitively priced for bigger sales! And they're *experience-engineered* by men with more than 25 years of heat engineering behind them.

Dealers offering this most advanced of all forced warm air gas furnace lines are going to make real money! If you can meet the highest qualification standards in the heating industry, we'd like to talk to you *now* about a good sales territory.

APPROVED BY AMERICAN GAS ASSOCIATION



▲ **HI-FURNACES.** For basement or utility room installation, ideal for homes where space is at a premium. Six sizes with input capacities from 75,000 to 200,000 Btu. Height is 63 inches, depth 29 inches, with widths varying from 16 to 34 inches.

▲ **LO-FURNACES.** For basement installation. Especially suitable where ceilings are low. Six sizes with input capacities from 75,000 to 200,000 Btu. They are 41 inches high, 42 inches deep and vary in width from 16 to 34 inches.

▲ **COUNTERFLOW-FURNACES.** For small basementless homes, especially those using perimeter heating systems. Three sizes with capacities from 75,000 to 125,000 Btu. Height is 63 inches, depth 29 inches, with widths varying from 12 to 23 inches.

The new Timken Silent Automatic forced warm air gas furnaces are the latest addition to a complete line of quality-built gas-fired equipment for every home heating need. Other models include boilers, conversion burners and oil-to-gas conversion kits.

### Only Timken Silent Automatic Offers All These Outstanding Sales Features!

- **NEW ENGINEERING!** Years were spent in developing these superior furnaces. They combine the finest, most wanted gas heating features in one handsome cabinet, and meet the latest approval requirements!
- **NEW STYLING!** These furnaces are lifetime beauties! Sturdy modern construction and a silver-toned baked-enamel finish give them real eye-and-buy appeal!
- **NEW BURNER!** Advance-designed ribbon-type burner is pre-

cision die-formed of stamped steel, vitreous enameled inside and out to prevent corrosion. Assures efficient, dependable operation at all times!

- **NEW FEATURES!** Adjustable blower speeds . . . flame-proof filters of spun glass . . . quiet, rubber-mounted motor . . . completely automatic controls.
- **NEW SALES OPPORTUNITIES!** Fifteen different models and sizes make it possible for you to meet the heating needs of nearly every home in your territory!
- **NEW ADAPTABILITY!** They function perfectly at both normal and high altitudes with any gas—city, LP or LP-Air mixtures.
- **NEW EASE OF SERVICE!** Vital parts are concealed within the cabinet, yet are readily accessible without major dismantling!
- **AND REMEMBER!** When you're selling Timken Silent Automatic, you're backed by a company with an unmatched reputation for quality and leadership!

**TIMKEN**  
*Silent Automatic*  
**GAS HEAT**

TIMKEN SILENT AUTOMATIC DIVISION  
The Timken-Burner-Air Company • Jackson, Michigan  
The Timken-Detroit Air Company of Canada, Ltd., Toronto, Ont.

TRADE MARK REGISTERED

MY ANCESTORS  
HAVE BEEN  
USING THIS PERCH  
FOR 40 YEARS



It's  
**HUSSEY COPPER**  
of course!

**HUSSEY**

EAVE TROUGHS  
CONDUCTOR PIPE  
FITTINGS  
AND  
ACCESSORIES



HUSSEY COPPER is the metal of permanence and lasting beauty . . . proof against the ravages of time and weather in all outdoor applications. For a note of extra-quality in your work and a permanent reputation-builder on every job . . . HUSSEY COPPER sets the standard.

**C. G. HUSSEY & COMPANY**

(Division of Copper Range Co.)  
ROLLING MILLS AND GENERAL OFFICES  
PITTSBURGH 19, PA.

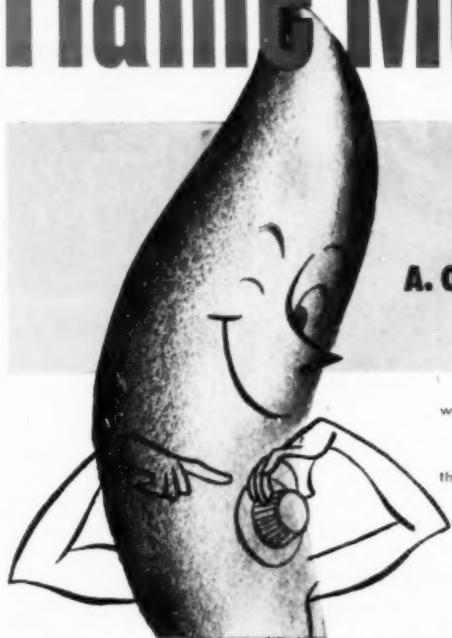
*Seven  
Warehouses  
to serve you*

PITTSBURGH (19)  
2830 Second Avenue  
CLEVELAND (14)  
5318 St. Clair Avenue  
NEW YORK (13)  
140 Sixth Avenue

CHICAGO (18)  
3900 N. Elston Avenue  
ST. LOUIS (3)  
1620 Delmar Boulevard  
PHILADELPHIA (30)  
1632 Fairmount Avenue

CINCINNATI (2)  
424 Commercial Square

# Flame Modulation!



Provided only by the  
**A. O. SMITH WINTER AIR CONDITIONER**

with the  
**Flame  
that  
Tunes  
Itself**

Here's the furnace you've been wanting to sell! The warm-air furnace that automatically compensates for heat losses as they occur *without on-and-off burner cycles!*

It's the only winter air conditioner with a flame that tunes itself continuously to heating needs, the furnace that keeps up with the weather . . . that "thinks for your thermostat"!

Three exclusive components make this kind of furnace possible and provide perfect "LIVING-LEVEL" HEATING. They are: (1) *Magic Heat Control* which continuously measures the rate of heat loss and automatically adjusts input of gas to the (2) *Modu-flame Burner* which provides the precise amount of heat required, and (3) *Duo-Level Blower Control* which automatically varies the velocity of constantly circulating filtered air in accordance with the heat output.

As a result, indoor comfort is kept uniform, constant, regardless of outdoor temperature fluctuations.

In the A. O. Smith Winter Air Conditioner you offer de luxe construction for heavy-duty service and permanence; an all-welded, hi-efficiency heat exchanger with more heating surface; and clean, compact design. Factory assembled, wired, tested and adjusted; ready for quick and easy installation!

For complete information, write A. O. Smith Corporation, Permaglas-Heating Division, Dept. AA-1152, Kankakee, Ill.

**Nothing else like it on the market!**

## A.O. Smith

PERMAGLAS-HEATING PRODUCTS

**SALES:** Atlanta • Chicago 4 • Dallas 2 • Denver 2 • Detroit 21 • Houston 2 • Los Angeles 22 • Midland 5, Texas • Milwaukee 8 • New York 17 • Philadelphia 3 • Pittsburgh 19 • San Francisco 4 • Seattle 1 • Springfield, Mass. • Washington 6, D.C.

**SERVICE:** Chicago 17 • Dallas 1 • Los Angeles 12 • Union, N.J.

International Division: Milwaukee 1

In Canada: John Inglis Co., Ltd., Toronto



### LIVING-LEVEL HEATING MEANS

- More** than automatic heat!
- More** than continuous air circulation!
- More** than mechanical burner control!
- More** than electronic temperature control!



Low Boy and High Boy Models are approved by AGA for modulation of gas input from 40,000 to 100,000 Btu/hr.



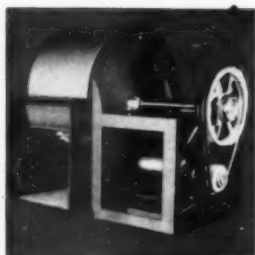
A. O. Smith also manufactures:  
Home-Heating Boilers • Gas Conversion Burners • Commercial Water Heaters and the famous Permaglas Automatic Water Heater with glass-surfaced steel tank that can't rust because glass can't rust!





here's a

# SMART MOVE...

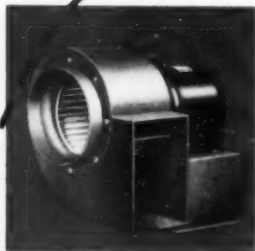


## BELT DRIVE UTILITY BLOWERS

You're never in the sliding corner when you stock this sturdy arc-welded blower. Motor pulley adjustable for various speeds. Housings can be tilted when exhaust angles are required.

## DIRECT DRIVE UTILITY BLOWERS

Move into more sales with versatile Direct Drives. Install in boiler rooms, restaurants, wash rooms, etc. Housings constructed of 16-gauge steel. Peerless job-matched motors available for all types of current.



## PRESSURE BLOWERS

When high-pressure air moving or cooling is the problem, you use good strategy by recommending a Peerless Pressure Blower. Blades dynamically balanced and self-cleaning. Base and housing of heavy-gauge steel.



sales **JUMP** quickly  
when you stock the full line  
of *Peerless* smoothly-operating,  
profit-making fans and blowers

SMOOTHEST PERFORMERS ON THE MARKET

*Peerless  
Electric*

FAN AND BLOWER DIVISION  
**THE PEERLESS ELECTRIC COMPANY**  
1405 WEST MARKET STREET  
WARREN, OHIO

#### INDUSTRIAL EXHAUST FANS

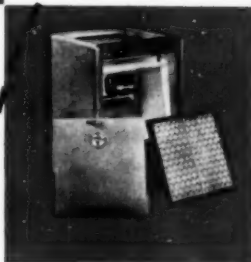
A vital part of the complete line. Ventilate warehouses, foundries, etc. Built for continuous duty. Totally enclosed ball-bearing motors. Horizontally or vertically mounted. Stock for more industrial sales.



WRITE FOR  
BULLETIN SDA-160  
FOR COMPLETE DATA

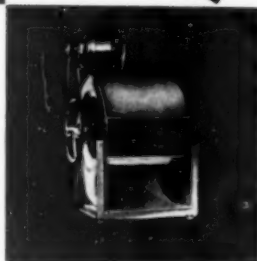
#### BLOWER-FILTER PACKAGE UNITS

Hop into the king row with Package Unit sales. Used with gravity furnaces. Blower circulates warm air in winter . . . cool air in summer. Eliminates stratified air and helps stop windows from steaming.



#### FURNACE BLOWERS

A new unit that cuts installation time. Rugged construction. Positive belt drive with job-matched motors. Quiet, smooth performance. Stock for quick installations and profits.







These are the reasons  
**why METALBESTOS**  
is the **best** gas vent

1  
2  
3

**FAST, EASY INSTALLATION**

Sturdy, die-formed couplers slip together readily without forcing. No cement, mastic or banding material needed. Adjustable lengths and elbows eliminate costly cutting and fitting; speed installation.

**SAFE, EFFICIENT VENTING**

Double-wall Metalbestos gives a "hot stack" quickly and continuously for complete removal of fumes — yet air-insulated outer pipe remains cool even after prolonged operation. Precision-made couplers seal both inner and outer pipes ... cannot pull apart to cause dangerous leaks.

**DURABLE AND DEPENDABLE**

All-aluminum, sturdy construction eliminates costly replacements due to damage during shipping, handling or installation. Metalbestos will not crack or shatter, and is highly resistant to corrosion — forms a rigid, dependable venting system.

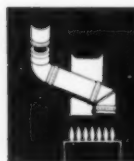


the  
insulated  
vent

for the **best** job use  
**METALBESTOS**



Write today  
for Free VENTING MANUAL  
This useful manual, "Venting  
of Gas Appliances," contains  
important rules and helpful tips  
on approved venting prac-  
tices. No cost or obligation.  
Write today to Dept. B.



**METALBESTOS** DIVISION

WILLIAM WALLACE COMPANY • BELMONT, CALIF.

# the **BIG NAME** in **HEATING**

— for warm air heat!

*Tailor-made for today's homes!*



# Mueller Climatrol

Type 110 gas-fired Winter Air Conditioner. Five sizes: 60,000 to 160,000 Btu input.

**...meets your customers' demand for warm-air heating at its best!**

Yes, Mueller Climatrol is a famous name — nationally advertised, nationally known for heating leadership for more than 94 years. When home owners think of heating they naturally think of Mueller Climatrol. The rest is up to you.

And Mueller's complete line helps you follow through. No matter what your customers' needs may be — *you can fill the bill best with Mueller Climatrol*: sizes and types for every home... for any fuel... forced-air or gravity... steel or cast iron... hi-boy, low-boy or horizontal design... conversion

burners... unit heaters — the Mueller Climatrol line is really complete.

In addition, you deliver the finest quality, in designs tailor-made for today's homes and built to deliver years of solid heating comfort! Mueller Climatrol has sound engineering, compact styling — everything it takes to satisfy today's customers — everything it takes to keep you way ahead of your competition! Write for our new "all products" catalog on this profit-proved line... L. J. Mueller Furnace Co., 2030 P. W. Oklahoma Ave., Milwaukee 15, Wisconsin.



D-117

# Mueller Climatrol

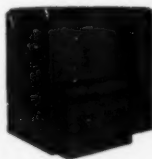
**FOR GAS FOR OIL FOR COAL**

## Winter Air Conditioners

Highboys — up-flow and counter-flow, for gas and oil. Sizes from 60,000 to 160,000 Btu input. Most models convertible. Type 109 (gas) shown.



Horizontal — oil and gas Winter Air Conditioners and Unit Heaters. Sizes 60,000 — 138,000 in gas; 110,000-250,000 in oil — all units are convertible.



Lowboys — sized from 90,000 — 475,000 Btu input, in gas, oil or coal. Most models have designed convertibility. Steel or cast iron models gas or coal.

## Gravity Furnaces



Gas, oil or coal—wide range of sizes. Some models are modular; forced air and cooling may be added later. Most units are convertible.

## Conversion Burners



Type 450 oil conversion burner.



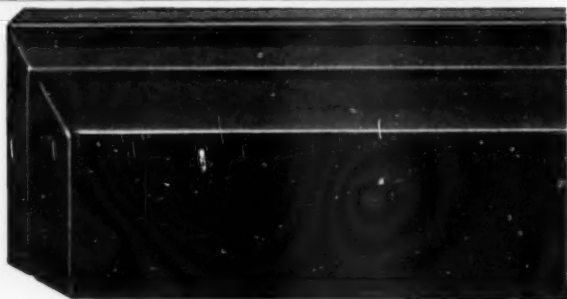
Type 500 gas conversion burner.



# TITUS

**NEW  
No. 100**

## Perimeter



**APPROVED**

\*Leading architects and contractors have found that there is no substitute for the great quality, high efficiency, low cost installation and dependability of TITUS PERIMETER DIFFUSERS.

**SO NEW... SO ADVANCED... ORDINARY REGISTERS JUST LOOK OLD FASHIONED BY COMPARISON. TITUS DIFFUSERS MAKE ANY HEATING OR COOLING SYSTEM MORE EFFICIENT... BECAUSE THEY DELIVER HEAT WHERE IT IS MOST NEEDED... BECAUSE THEY DIFFUSE AIR THE MODERN WAY.**

### REQUIRE 1/2 LABOR... 1/2 DUCT WORK OF ORDINARY INSTALLATIONS

Here is the first DIFFUSER to solve the problem of old style installations. Less trips to job. No roughing-in necessary. Diffuser slips easily onto boot. Needs no cutting into wall or plaster. Amazing savings can be realized on every job. Once you install TITUS DIFFUSERS you'll find you cannot afford to go back to old, slow, expensive installation practices.

### FOR ANY TYPE WARM AIR HEATING JOB

Can also be used in old or new installations. Need not be confined to perimeter jobs.

### BEAUTY THAT BLENDS WITH THE ROOM

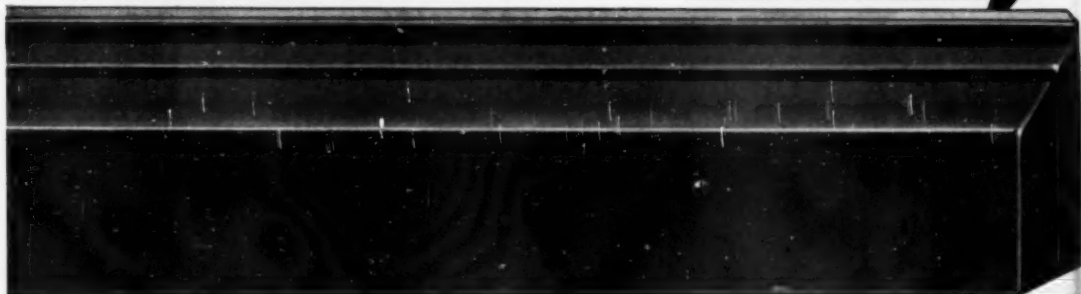
TITUS DIFFUSERS are furnished with finish coat... no additional expensive painting required. Made of heavy duty 20 gauge steel to withstand floor level abuse.

### GUARANTEED QUALITY

These competitively priced DIFFUSERS MEET AND BEAT competition price-wise, beauty-wise, product-wise.

**TITUS DIFFUSERS ARE  
AVAILABLE FOR  
IMMEDIATE SHIPMENT**

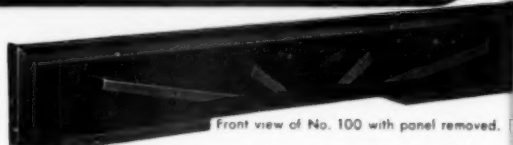
# most widely accepted Diffuser... *Today*



Bottom view No. 100. Slots provide easy attachment to duct or boot. Note rugged construction which will withstand floor level use and abuse. Heavy duty 20 gauge steel.

**CONTRACTORS ORDER A SAMPLE DIFFUSER NOW.** Remember not until you have a sample TITUS DIFFUSER can you show your customers its extra attractiveness, greater diffusing efficiency, superior construction.

Also, not until you install this DIFFUSER can you see the great amount of labor and duct work SAVINGS possible.



Front view of No. 100 with panel removed.

**DELIVERS HEAT WHERE IT IS NEEDED MOST**  
Four bevels direct air stream over both the entire outside wall and room proper, from floor to ceiling with 180° diffusion. Eliminate floor draft. Make house warmer with an even "blanket" of heat over wall. Eliminate "Cold Film" on outside walls.

## **NEW COMPLETE "QUICK SALES" DISPLAY PROMOTION KIT**

### **FREE LITERATURE... WRITE TODAY**

We're going all out to see that every contractor, dealer, wholesaler is **GUARANTEED EASIER DISPLAY, EASIER EXPLANATION, EASIER SALES** OF BOTH PERIMETER HEATING AND TITUS PERIMETER DIFFUSERS. THIS KIT WILL HAVE EVERYTHING YOU NEED TO DISPLAY AND SELL TITUS PERIMETER DIFFUSERS.

**KIT INCLUDES:**

- 1** Complete display unit (32" x 6 1/4" x 6") with full size Titus Diffuser—showing how it is installed in model room.
- 2** 25 Complete Diffuser Catalogs.

**3** 25 Informative Booklets on "Trends in Warm Air Heating." THIS KIT is a \$25.00 value. But it is given **FREE** with the purchase of 24 TITUS DIFFUSERS.

#### **TITUS INCORPORATED**

Gentlemen: Please rush me:

- ☐ Booklet on TRENDS IN WARM AIR HEATING
- ☐ COMPLETE CATALOG ON PERIMETER DIFFUSERS and RETURN AIR GRILLES

#### **WATERLOO, IOWA**

- ☐ PACKAGE PLAN FOR 4, 5, 6, and 7 ROOM HOUSE
- ☐ HAVE A REPRESENTATIVE CALL AT ONCE
- ☐ 24 PERIMETER DIFFUSERS INCLUDING FREE "QUICK SALE" DISPLAY KIT.

Name \_\_\_\_\_

Address \_\_\_\_\_

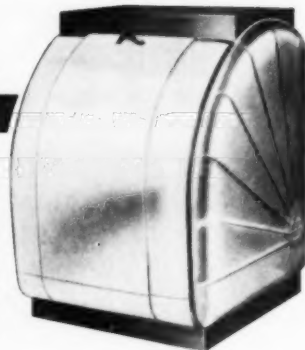
City \_\_\_\_\_

State \_\_\_\_\_



**"Because They Want a Quality Blower  
That Installs Easier, My Louisville, Ky.,  
Distributors and Dealers Always Vote  
For *Viking!*"**

**says Woody Faison,  
Friendly Viking Representative**



**HERE'S WHAT CLARKE KAYE, LOUISVILLE DISTRIBUTOR,  
HAS TO SAY ABOUT VIKING'S SALABILITY:**



**"In our tight competitive area, only the best  
product can give you an edge over the other  
fellow. That's why Viking Blower Packages  
are in such great demand. They've got ad-  
vanced design and styling, exclusive labor-  
saving features, and trouble-free parts. I'm  
sold that you can't beat Viking."**

**CLARKE KAYE, Louisville Heating Supply Co.  
519 Barrett Ave., Louisville, Ky.**

**AND READ WHAT THESE LOUISVILLE DEALERS ARE SAYING ABOUT VIKING:**

**"My customers go for the streamlined Viking cabinet. Its good looks are a real sales  
booster. And Viking's quiet operation pays off in sales when you demonstrate a package  
before a prospect."**

**ALBERT W. CHAPMAN, Al. Chapman Sheet Metal Works  
316 W. Breckenridge, Louisville, Ky.**



**"I like Viking dependability. Since switching to Viking I've cut call-  
backs at least in half. The spring thrust take-up, the specially designed  
motor mount, and the once-a-season lubrication mean you install a  
Viking Blower Package and then just about forget it."**

**MARTIN D. BRYANT, Bryant Heating Co.  
1323 Bevvly Blvd., Louisville, Ky.**

**"Now just take the snap-out filter ledge. For a serviceman that's swell. He can get into  
the cabinet easily and save up to 45 minutes on installation. That's another way Viking  
boosts my profits."**

**ARTHUR C. HARPRING, Harpring Tempered Air Corp.  
1000 E. Ky. St., Louisville, Ky.**



**Viking**  
AIR CONDITIONING CORP.  
5601 Walworth, Cleveland 2, O.



**FANS**



**HUMIDIFIERS**



**BLOWER  
ASSEMBLIES**



**BLOWER WHEELS**

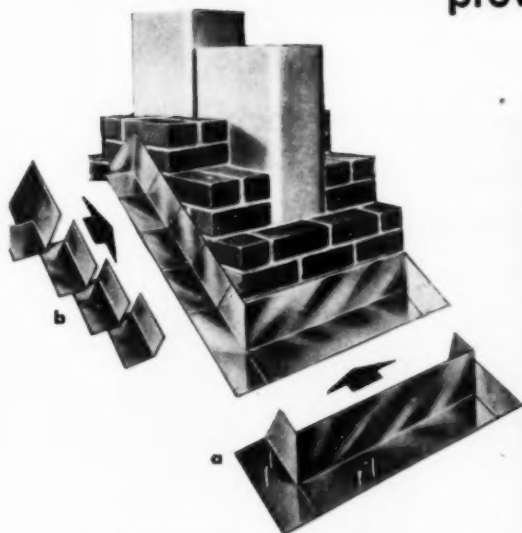


**PACKAGE  
BLOWERS**

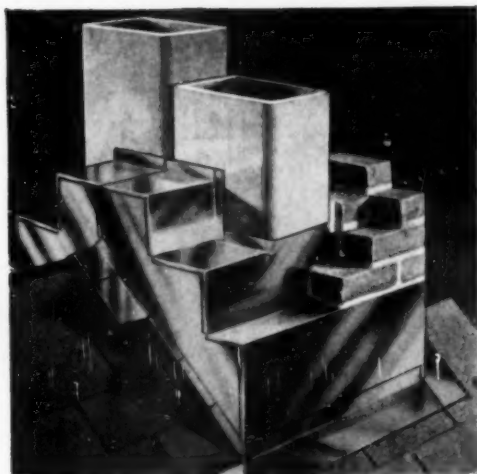


# THROUGH-TO-FLUE FLASHING

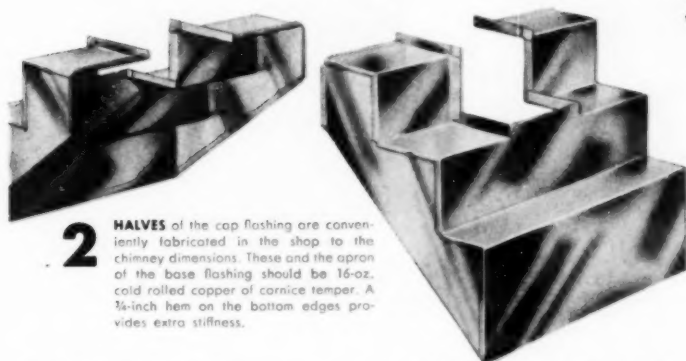
provides positive protection



**1 BASE FLASHING** consists of (a) a shop-fabricated apron installed over shingles and (b) flashing squares at sides, installed as courses of shingles are laid.



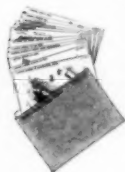
**3 CAP-FLASHING** halves are set in place on the masonry as shown here and then joined by lock seams to form a complete through-to-flue barrier against water infiltration. After the cap flashing is in place, the brick-work is continued to the desired level.



**2 HALVES** of the cap flashing are conveniently fabricated in the shop to the chimney dimensions. These and the apron of the base flashing should be 16-oz. cold rolled copper of cornice temper. A 3/4-inch hem on the bottom edges provides extra stiffness.

Whether a chimney is at the ridge or in the slope, or whether it is only partly in the roof, as in the gable, or at the outside wall—the problem, the method and the need for a positive, leakproof flashing, is the same.

Study the illustrations above for a moment and you will see why this flashing design should be your standard procedure. Don't forget—it's cheaper to prevent trouble than to correct it. Call-backs cost money. 2083



**THIS IS ONLY ONE** of many solutions to design problems involving sheet metal work that Anaconda building specialists have worked out for your benefit. An entire series of detailed drawings, showing new or improved ways to apply sheet metal, may be obtained absolutely FREE. These are printed individually on 8 1/2" x 11" sheets, convenient for filing. Write for Portfolio S to The American Brass Company, Waterbury 20, Connecticut.

for better sheet metal work—

use **ANACONDA**® copper

# "Our Petro is wonderful!"



She is telling her friends  
about this thrifty new  
winter air conditioner

**T**HIS PETRO OWNER is heartily endorsing you and your service. For you sold her on Petro, and now that it's installed and doing a fine job — just as you said it would — she's most enthusiastic. This is what she's saying . . .

## "wonderful for home comfort"



Yes, with a Petro winter air conditioner furnace Mrs. Homeowner and her family are enjoying the luxury of the most modern automatic heating. Air is warmed to just the temperature preferred, cleaned by filters and quietly circulated through the house.

## "wonderful for convenience"



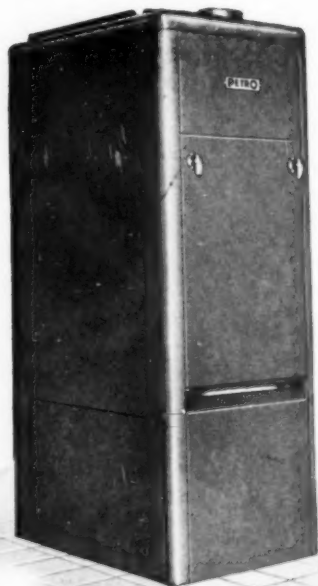
Owners can relax when their Petro automatic oil furnace does the heating job. They simply set the thermostat for the temperature they like and let Petro do the rest; no trips to the basement, no drafts to adjust, no fuel to handle.

## "wonderful for heating economy"



Petro heat makes a hit with the budget-minded homeowner. The built-in Petro burner, with its balanced fuel-air ratio and tailored flame, burns less oil. And in addition it burns No. 2 or lighter oil, including the economical new catalytic oils. Furnaces are made of heavy-gauge steel, electrically welded into solid, permanent units. Long years of trouble-free, economical performance are built into every unit.

Write for full information on Petro Highboy and Lowboy Oil Furnaces. Ask also about Petro horizontal oil furnaces, oil boiler-burner units, and residential, commercial and industrial conversion oil burners. Address PETRO, 3170 West 106 St., Cleveland 11, Ohio.



Model PDH Highboy (illustrated) for closet and other installations with limited floor area. For low head-room applications the PDL Lowboy is ideal.

# PETRO

REG. U.S. PAT. OFF.

## Automatic OIL HEATING

Cleveland 11, Ohio

MAKERS OF QUALITY HEATING AND POWER EQUIPMENT SINCE 1903

# R*ecipe for comfort*



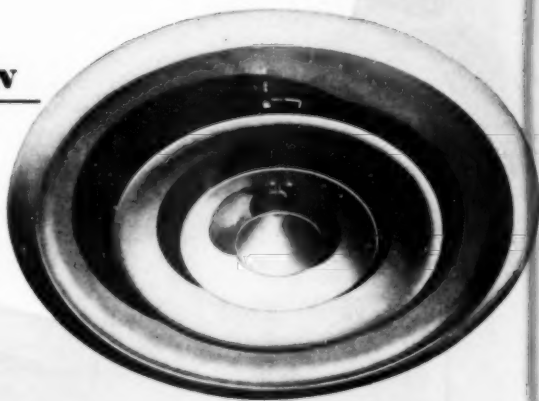
## **1 CONTROLLED TEMPERATURES**



## **2 CONTROLLED HUMIDITY**



## **3 DRAFTLESS** **AIR DISTRIBUTION**



Air conditioning calls for *three* ingredients: controlled temperatures, controlled humidity *and* draftless air distribution. Anemostat air diffusers provide the finishing touch of comfort by distributing a uniform, slow-moving blanket of air that reaches every corner of the room.

Architects, engineers and contractors know that Anemostat air diffusers blend perfectly into the recipe for *comfortable* air conditioning. That's why more Anemostat air diffusers are in use than any other make.

### **ANEMOSTAT®**

**DRAFTLESS Aspirating AIR DIFFUSERS**

**ANEMOSTAT CORPORATION OF AMERICA**

10 EAST 39th STREET, NEW YORK 18, N. Y.

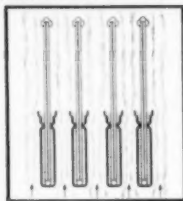
REPRESENTATIVES IN PRINCIPAL CITIES

*"No Air Conditioning System Is Better Than Its Air Distribution"*

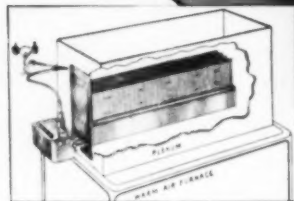
# no plenum too small for the CONVECTOR HUMIDIFIER!

● Unlike ordinary warm air furnace humidifiers, this Maid-O'-Mist Convector Humidifier has no flat bottom to block the flow of warm air. Maid-O'-Mist's individual  $\frac{3}{8}$ " copper water troughs are spaced 1" apart to allow unrestricted air flow between the evaporator pads. This exclusive design provides greater evaporating working area so necessary in short cycle modern heating. That's why Maid-O'-Mist Convector Humidifier is ideal for the small plenums of all modern warm air furnaces.

**Patented Evaporator Pads** are constructed of corrugated long grain paper fillers with outer layers of asbestos. The corrugations form capillary tubes which greatly increase the water absorbing qualities of the pads.



**Note above** how Maid-O'-Mist's exclusive individual trough design allows the air to flow freely up between the evaporator pads. The entire area of each of the large evaporator pads is in direct contact with the warm air flow thus providing 30% more evaporating surface.



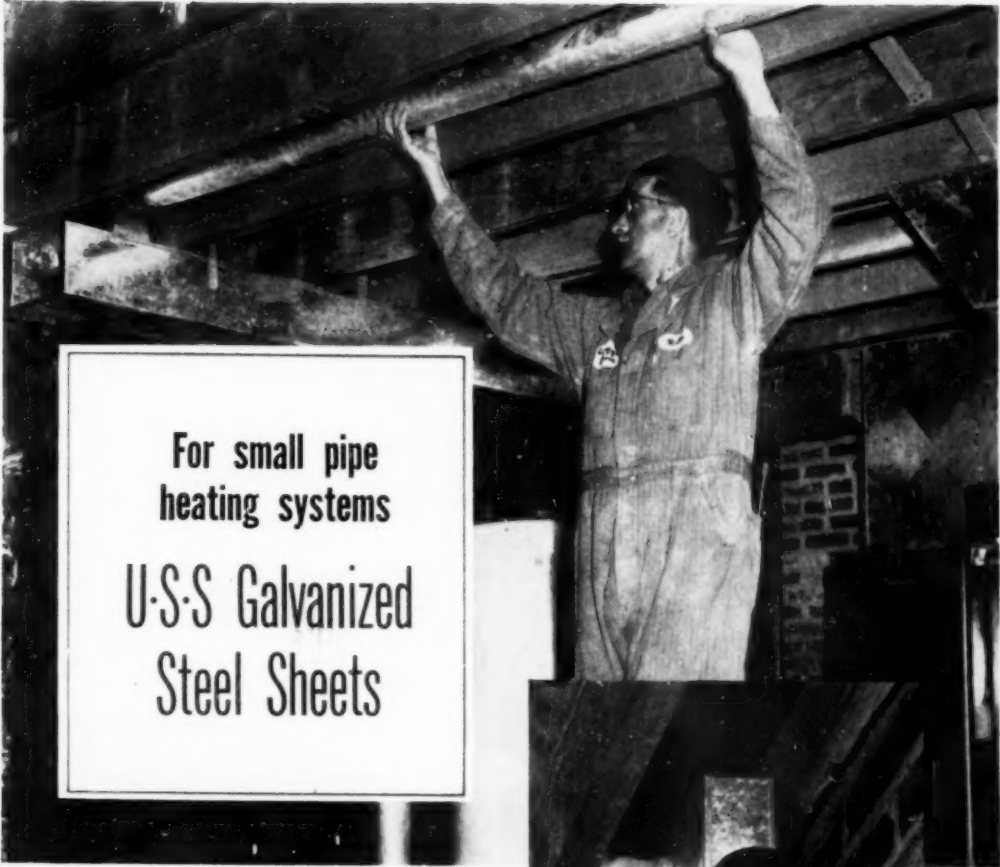
**This view** shows why installation time can be reduced by 50%. You just cut opening in plenum and make water connections. 13 sizes available with evaporation capacities of 1 to 10 gals. of water per day. Get full information on these competitively priced units from your jobber or write for Bulletin 701-B.

View at left, shows the back plate extended to illustrate the individual trough construction. Entire humidifier is made of non-corrosive metals—copper and brass. 6 feet of  $\frac{1}{4}$ " O.D. copper tubing with saddle valve for water connections is also furnished.

**60%**  
less air restriction in plenum  
**30%**  
more evaporation area  
**50%**  
less installation time



**AUTOMATIC HUMIDIFIERS . . . . . AUTO-VENTS**  
**WATER LINE CONTROLS . HEATING SPECIALTIES**  
**MAID-O'-MIST, Inc.**  
**3217 NORTH PULASKI ROAD . CHICAGO 41, ILL.**



For small pipe  
heating systems

## U-S-S Galvanized Steel Sheets

**S**MALL diameter pipes are one of the newest trends in warm air heating installations. Many contractors are finding this system makes it easier to sell modernization jobs where space is at a premium.

In installing small pipe systems—as well as conventional ductwork arrangements—contractors find they can do their best jobs with U-S-S Galvanized Steel Sheets. These sheets can be rolled, bent, cut, formed and soldered without difficulty. And the zinc coating gives the installation lasting protection against rust and corrosion.



For the finest performance, both in fabrication and service, use U-S-S Galvanized Steel Sheets. Your customers know the United States Steel name. . . they recognize that it stands for the best in steel.

## U-S-S GALVANIZED STEEL SHEETS

UNITED STATES STEEL COMPANY, PITTSBURGH • COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO  
TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA. • UNITED STATES STEEL SUPPLY DIVISION, WAREHOUSE DISTRIBUTORS, COAST-TO-COAST  
UNITED STATES STEEL EXPORT COMPANY, NEW YORK



2-1645

UNITED STATES STEEL



**HITCH YOUR WAGON TO THIS STAR...bryant**



See  
what  
you  
get

IN THE SENSATIONAL

**bryant "327"**  
unit heater

NOW AVAILABLE IN  
ALL POPULAR SIZES



**FREE FOR THE ASKING!** Call your Bryant distributor for your copy of this 20 page fully illustrated book which provides you with much helpful information on specifying, installing and properly locating unit heaters. This comprehensive booklet has been designed to help you.

**Sets NEW Standards in...**

**Quiet Operation** . . . NO narrow passages to cause whistling . . . it's open, streamlined—efficiently designed to HUSH the air flowing through.

**Compact** . . . the "327" installs within inches of ceiling, saving space. It's lighter, easier to handle, easier to install.

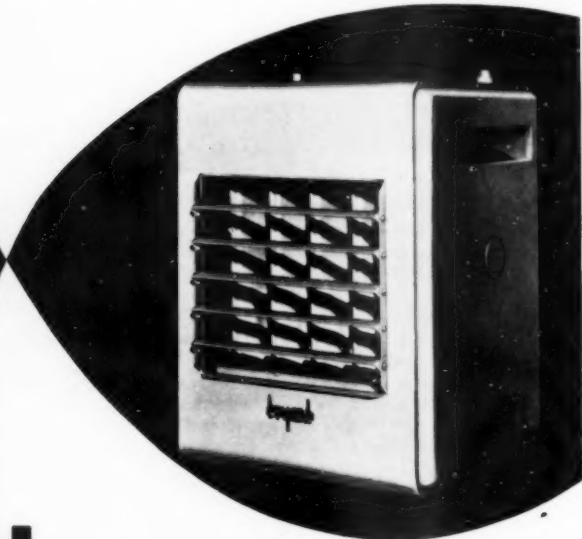
**Comfort** . . . no cold blasts at start of cycle. Fan won't start until the heat exchanger is warm enough to assure comforting heat.

**Long, Trouble-free Performance** . . . the "327" retains its high efficiency for life. Efficient Venturi tubes provide longer, trouble-free service, less heat loss up the flue.

**Extra-sensitive Controls** . . . responsive low-voltage controls mean better, more uniform heat. Safety controls prevent overheating.

**Quick, Easy Servicing** . . . easy-open access panel at bottom permits cleaning and servicing without removing unit.

Yes, the revolutionary Bryant "327" opens up hundreds of new unit heater sales for you. See your Bryant distributor today or write Bryant Heater Division, Affiliated Gas Equipment, Inc., Dept. 19, 17825 St. Clair Ave., Cleveland 10, Ohio.



**bryant**<sup>®</sup>

**BEST BUY IN...**

**HEATING  
AIR CONDITIONING  
WATER HEATING**

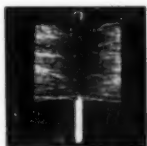
# SCHAEFER BRUSHES

## - MILWAUKEE -

**"BUY SCHAEFER----IT'S SAFER"**

Buying ALL your brushes from SCHAEFER, you can be sure of one high standard of performance, durability, service, and value. You'll enjoy easier inventory control — and you get the correct brush for every need, because of Schaefer's complete line and complete stock.

In Flue and Boiler Brushes — insist on Schaefer's "SILVER BRITE" rustproof spring steel wire, developed for longer wear, more effective cleaning.



**SCHAEFER**  
Rectangular Flue Brushes  
No. R 415—2"x4"x1 1/2"  
No. R 416—3"x5"x1 1/2"



**SCHAEFER**  
Boiler Brushes  
No. B 201—1 1/2"x4"x3 1/2"  
No. B 204—2 1/2"x6"x3 1/2"  
No. B 205—3 1/2"x8"x3 1/2"



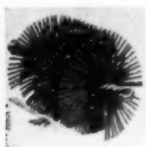
**SCHAEFER**  
Boiler Brushes  
No. B 206—1 1/2"x4"x1 1/2"  
No. B 207—2 1/2"x6"x1 1/2"  
No. B 202—3 1/2"x8"x1 1/2"  
4 1/2"



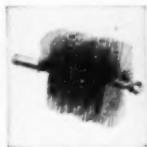
**SCHAEFER**  
Boiler Brushes  
No. B 208—2"x4"x6"  
No. B 400—2 1/2"x1 1/2"x6"  
No. B 401—3"x5"x6"



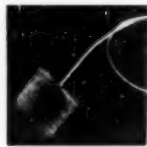
**SCHAEFER**  
Single and Double  
Spiral Flue Brushes  
No. S 433—Single Spiral  
1" to 4" dia.  
No. S 433—Double Spiral  
1" to 4" dia.  
No. S 434—For spiral  
Flues, 1/2" to  
1" dia.



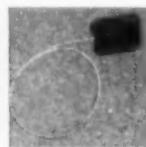
**SCHAEFER**  
Round Flue  
Brushes of Single Spiral,  
Flat Steel Wire  
No. R 420—1" to 4" dia.



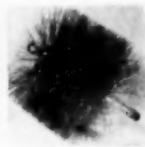
**SCHAEFER**  
Rectangular  
Flue Brushes of Flat  
Steel Wire—Spiral  
No. R 420—2"x3 1/2"x4"  
No. R 425—2"x6 1/2"x7"



**SCHAEFER**  
Furnace  
Brushes of Silver Brite  
Rustproof Steel  
No. R 442—3", 4", 4 1/2",  
5" with 5 ft.  
handle.



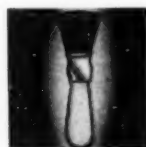
**SCHAEFER**  
Fibre Furnace Brushes  
Rotated Basting fibre,  
flexible wire stem, 4", 5",  
6" dia., 36" and 48"  
handle.  
No. S 444-445



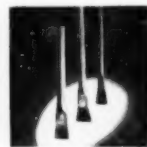
**SCHAEFER**  
Chimney  
Cleaning Brushes  
No. C 6—6", 7", 8", 10",  
and 12" dia. round style  
of Black Tempered Brush  
Wire  
No. C 6B—6", 7", 8", 10",  
and 12" dia. oblong style  
of Flat Tempered Steel  
Wire.



**SCHAEFER**  
Wire Wheel Brushes  
Solid Center Type of  
crimped steel wire.  
No. 276—6" dia. x 1 1/2"  
face  
No. 278—6" dia. x 1 1/2"  
face  
No. 280—10" dia. x 2"  
face.



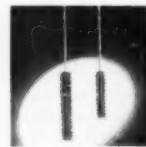
**SCHAEFER**  
Handy Wire Brush  
No. H 10—For roughing,  
soldering etc., 6" long,  
tempered steel wire  
trimmed 1 1/2".



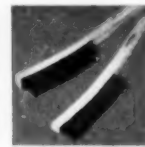
**Tin Handle Acid or  
Dope Brushes**  
Selected grade bristles in  
tin handle. Width, 3/4",  
1 1/2", 2".



**T. W. Flat Acid Brushes**  
Timbers soldering brush,  
barbering filling, 1 1/2",  
width, 7 1/2" overall.  
Twisted wire handle.



**Radiator or Condenser  
Tube Brushes**  
Twisted in wire handle,  
selected hair or bristle.  
Wide range of sizes.  
No. 10—3/4" dia. x 2" brush  
x 1 1/2" overall.  
No. 11—1/2" dia. x 3" brush  
x 1 1/2" overall.



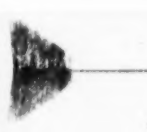
**SCHAEFER**  
Curved  
Handle Wire Brushes  
No. 810—Oil tempered  
steel wire, trimmed 1 1/2",  
hardwood block, 14" long.  
Brush 6", 2, 3 or 4 rows.



**Schaefer Copper Tube  
Fitting Brushes**  
Clean fittings faster,  
easier, safer. In 9 sizes  
for I.D. or Nominal Fitting  
Sizes from 1/4" to 2".



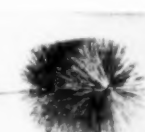
**Schaefer Copper Pipe  
Cleaning Brushes**  
For Cleaning Outside of  
tubing. In I.D. Sizes of  
1/4", 1/2", 3/4", 1" and 1 1/2".



**SCHAEFER**  
Vacuum Cleaner Brushes  
No. 1005—Basting Fibre Brush, 10 1/2" dia. tapered  
to 3" dia. x 6 ft. long—4 1/2" handle with  
threaded nipple at end.  
No. 1009—Basting Fibre Brush, 10 1/2" dia. brush x  
18" long. Handle 20" with threaded nipple  
at end.



**Wire Flue Brush and Extension Handles**  
4 ft. Handles with Nipple and Coupling.  
5 ft. Handles with Nipple and Coupling.  
6 ft. Handles with Nipple and Coupling.



Write for SCHAEFER Boiler and Flue  
Furnace Catalog No. 650, or for information  
on any special brushes you may need.

## SCHAEFER BRUSH MFG. CO.

117 W. Walker Street

Milwaukee 4, Wisconsin

WITH *Luxaire* YOU ELIMINATE  
EXPENSIVE SHOPPING AROUND!

...you simplify your buying ... you simplify your ordering ...

You Buy EVERYTHING from *ONE SOURCE!*

With Luxaire you have a  
**COMPLETE** line of heating units  
**DESIGNED** and **APPROVED**  
to burn **EITHER GAS or OIL**

● You are positively losing sales . . . you  
are positively losing money if you are not  
taking advantage of the tremendous oppor-  
tunities offered by Luxaire!

With Luxaire you offer your customer a com-  
plete line of heating units with a choice of  
fuels.

With Luxaire you offer your customers a unit  
that can be converted from gas to oil or from  
oil to gas without loss in efficiency.

With Luxaire you offer your customers  
rugged dependability and fine appearance at  
competitive prices.

You are losing money by not taking ad-  
vantage of the competitive prices now in ef-  
fect on Luxaire heating units.

Simplify your selling . . . by selling one line  
for all your installations! See your Luxaire  
jobber for catalogs and complete informa-  
tion.

*Luxaire* COAL FIRED UNITS



Air Conditioning  
Unit Steel Element  
88,943 to 127,433  
B.T.U. at Register



Steel  
Gravity Furnace  
20" to 34" Drum



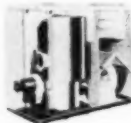
Cast Iron  
Gravity Furnace  
18" to 28" Firepot

*Luxaire* BASEMENT AIR CONDITIONING UNITS

with steel heating element

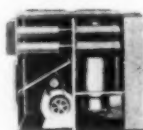


As a Gas Unit  
70,000 to 250,000  
B.T.U. Input



As an Oil Unit  
76,000 to 212,000  
B.T.U. at Bannet

with cast iron  
element



GAS Fired Unit  
90,000 to 200,000  
B.T.U. Input

APPROVED FOR EITHER GAS OR OIL

FOR GAS ONLY

*Luxaire*  
COUNTER FLOW  
UNIT



As an Oil Unit  
75,100 to 84,000  
B.T.U. at Discharge  
Outlet

*Luxaire*  
UTILITY A.C.  
UNIT

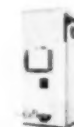


As an Oil Unit  
75,100 to 106,000  
B.T.U. at Bannet

*Luxaire*  
GRAVITY  
UNIT



As an Oil Unit  
71,200 to 100,000  
B.T.U. at Bannet



As a Gas Unit  
65,000 to 115,000  
B.T.U. Input



As a Gas Unit  
65,000 to 125,000  
B.T.U. Input



As a Gas Unit  
85,000 to 130,000  
B.T.U. Input

APPROVED FOR EITHER GAS OR OIL WITH EQUAL EFFICIENCY

THE *Luxaire* C. A. OLSEN MANUFACTURING COMPANY • • ELYRIA, OHIO  
HEATING & AIR CONDITIONING UNITS



## BUSINESS IS "LOOKING UP"



... for contractors selling the 'Kno-Draft Method' of Residential Warm Air Heating

When we say business is "looking up," we mean it literally. Look up at the ceiling in the picture. See that handsome Kno-Draft Air Diffuser? That's your new best seller

for warm air heating in homes. It does a better job of *even heating* for your customers, is easier and *more profitable* for you to install.

Here's all you do: Run your furnace bonnet up to the attic and take off for the diffuser outlets in the ceilings. Use prefabricated round duct for runouts and elbows,

with easy-to-install wrap-around insulation. You'll save time, cut costs.

Figuring a job is simple, too. Just use the 'inches of heat' method to size your Kno-Draft Ceiling Air Diffusers. It's practically impossible to go wrong.

If you want *your* business to "look up," get in on the ground floor with Kno-Draft. It's a time-tested principle proved by thousands of business and industrial installations. Mail the coupon today for all the facts — the advantages that home owners "go for," installation details, the bigger business you can expect.

CONNOR

**kno·draft®**  
adjustable air diffusers

W. B. CONNOR ENGINEERING CORP.  
Dept. 1-112, Danbury, Connecticut  
Please send me full details about the "Kno-Draft Method" of residential forced warm air heating.

Name .....

Position .....

Company .....

Street .....

City ..... Zone ..... State .....



OWENS-CORNING  
**FIBERGLAS**

**DUST STOP**<sup>\*</sup>

U.S. PAT. OFF.

**AIR FILTERS**

*...are advertised to an audience of  
millions on "ARTHUR GODFREY TIME."  
Display and promote DUST-STOP for  
profitable extra sales!*

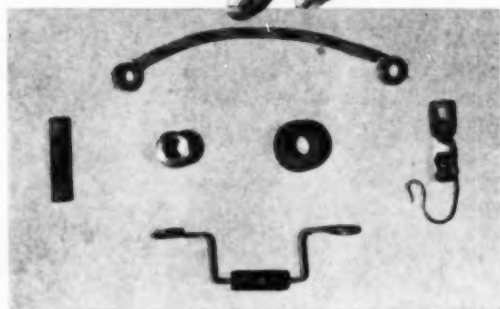
\*FIBERGLAS and DUST-STOP are trade-marks (Reg. U. S. Pat. Off.) of Owens-Corning Fiberglas Corporation for a variety of products made of or with fibers of glass.



*Why bother  
with all these  
heaters?*



...just a twist of  
the wrist adjusts  
a *Magic Dial*  
thermostat!



The exclusive Perfex adjustable heater, built right into the Perfex "Magic Dial" thermostat, offers you a complete range of heater adjustments to mate *any* primary control . . . coal, gas or oil. One simple adjustment and this Perfex thermostat is set for the job! . . . It's as simple as that. Only *one* model to stock! No assortment of heaters or thermostats to carry. Perfex is always first with service features for you . . . and with comfort features for your customers.

**EXCLUSIVE**  
Adjustable Heater

**EXCLUSIVE** "Magic Dial"

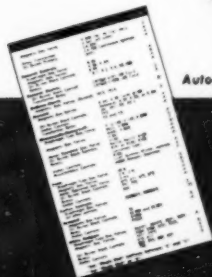
**EXCLUSIVE** two-wire  
Twin Contacts

**EXCLUSIVE**  
enclosed contacts.

**PERFEX**  
CONTROLS YOU CAN TRUST

PERFEX CORPORATION, MILWAUKEE, WISCONSIN  
In Canada, Perfex Controls, Ltd., Guelph, Toronto 1

Automatic Heating Controls • Industrial Instruments • Industrial Engine Radiators • Color Process Printing



Send for this FREE

PERFEX CORPORATION  
Controls Division

300 W. Oklahoma Ave., Milwaukee 7, Wisconsin

☐ I'd like a copy of the new Adjustable Heater card.

☐ Also include a copy of the new Perfex Condensed catalog.

Firm \_\_\_\_\_

Name \_\_\_\_\_

Street \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_

What's in the Sensational  
Profit-Making **MOR-SUN**  
CONTROLLED INVENTORY PROGRAM  
for **YOU!**



First Announced last month —  
the **MOR-SUN CONTROLLED INVENTORY PROGRAM**  
has become the hottest profit-making plan in the Home Heating Industry!

...because it means **GREATER PROFITS** for **YOU!**

Simply stated, it offers you a complete line of furnaces in just a few basic units!

You order a small stock of MOR-SUN basic furnaces, plus an equal number of assembled packaged burners you think you will require — GAS, OIL or LPG. If you guess wrong — think nothing of it; you can exchange burner packages with us! This means that the MOR-SUN Controlled Inventory Program gives you:

- A smaller investment in stock.
- Quicker delivery to your customers.
- Furnace installed without burner and controls — can't be pilfered in new construction.
- No worry about uncertainty of fuels.
- Guarantee to the customer of inexpensive future change-over without loss of efficiency.
- **NO DEAD INVENTORY.**

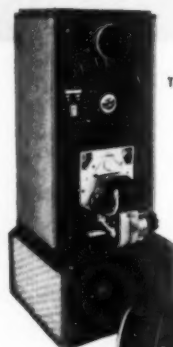
Only TEN . . . that's the exact number of furnaces you stock to have a complete inventory of the New MOR-SUN LINE! They range in bonnet output capacities from 52,000 BTU to 152,000 BTU. They can be fired with natural, mixed, manufactured or liquefied petroleum gas—or with petroleum fuel oil. The MOR-SUN line is completely re-engineered—thoroughly field-tested to operate efficiently and economically with either gas or oil.

Complete burner assemblies, ready for quick, easy installation, are shipped in separate packages.

Should your inventory become unbalanced with gas or oil burners, you merely adjust it by exchanging burner packages. You can control your inventory.

No indecision in ordering, no pilferage on new home construction, no dead inventory! The basic MOR-SUN furnace is installed now—the burners and controls later, when fuel decision is made.

But that's not the whole profit story . . . there's more — and it's yours for the asking . . . Phone or drop us a note.



THE GENERAL PURPOSE MODEL  
GP 11-12-13



THE NEW GAS BURNER



THE  
"TOASTER"  
MODEL  
JMT 1 - 2 - 3 - 4



THE MOR-SUN OIL BURNER



THE REVERSE FLOW MODEL RF 21 - 22 - 23

**ALL MODELS EITHER OIL OR GAS!**

"Sells on Sight"



**MOR-SUN Furnace Division**  
**MORRISON STEEL PRODUCTS, Inc.**

Manufacturers of Roly Steel Garage Doors and Carry-All Truck Bodies

625 AMHERST ST.

Founded in 1912

BUFFALO 7, N. Y.

# The baby doesn't need moisture

**But you don't sell humidifiers to babies**



A baby at the "3-corner pants" age isn't interested in more moisture . . . he is likely to have an excess already.

But you don't sell humidifiers to babies anyway. It is doubtful if a baby could understand or appreciate the best features of even a superior humidifier like the Skuttle.

But home owners do. They appreciate the self-flushing, self-cleaning feature of Skuttle Series 600. They can see the value in the acid and alkali resistant porcelain enamel steel pan and float chamber . . . the blown

glass float. They can see that these will last and give service without trouble over a long period. Also they can understand the extra efficiency of patented Vapoglas Plates which take up water faster than any others.

That's why it pays to talk to the babies' fathers and mothers, grandfathers and grandmothers, uncles and aunts, friends and enemies about Skuttle Humidifiers. Homes need the extra moisture . . . owners will buy humidifiers.

*Start talking Skuttle today . . . it pays.*



## Skuttle

**MANUFACTURING COMPANY**  
4099 Beaufait Ave. • Detroit 7, Mich.

### Note these new important features of Skuttle Humidifiers

**1. Porcelain Enamel Pan and Float Chamber**  
Two coats of porcelain enamel—acid and alkali resisting—on steel. Hard, dense, impervious, it's like a glass lining. Resists any water.

**2. Blown Glass Float** Can't leak—is not

attacked by any water. More bouyant—it closes the valve better than a copper float. Interchangeable with copper float.

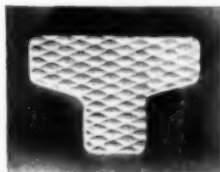
**3. Aluminum Holding Rack For Plates**—light, durable, acid resistant.



4914

### SKUTTLE SERIES 600 HUMIDIFIER

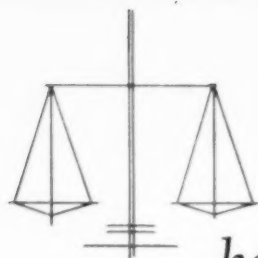
Self-flushing—self-cleaning. Holds up to 20 evaporating plates. Write for bulletin on complete line of Skuttle Humidifiers—Series 300 holds up to 40 plates—Series 500 for coal fired furnaces.



**PATENTED  
VAPOGLAS  
PLATES**

The most efficient plate ever made. All evaporating plates should be replaced once a year for full efficiency.

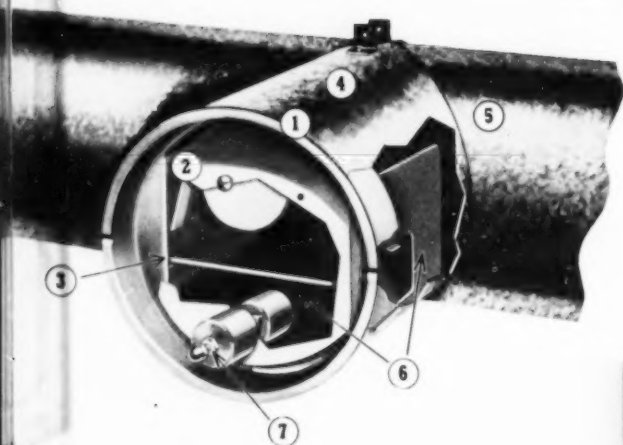
**Write for bulletin on the Skuttle Line**



when independent  
laboratories test  
heating equipment they

# depend on field

for a true performance



- 1 — Made of heavy materials — Field Controls Last Longer.
- 2 — Balanced at factory — Eliminating weight variations which could affect control's accuracy.
- 3 — Rocker type hinge pin — Quickly responsive, no friction. No sticking.
- 4 — Long Collar — No warping or clogging due to heat or soot, no service calls.
- 5 — Free smoke passage — A Field Control never blocks the flue.
- 6 — Side wings and fitted gate — More accurate because opening in control increases more uniformly.
- 7 — Factory adjusted — Set to maintain .06" draft until instrument setting is made.

## FIELD CONTROL DIVISION of H. D. Conkey & Company — Mendota, Illinois

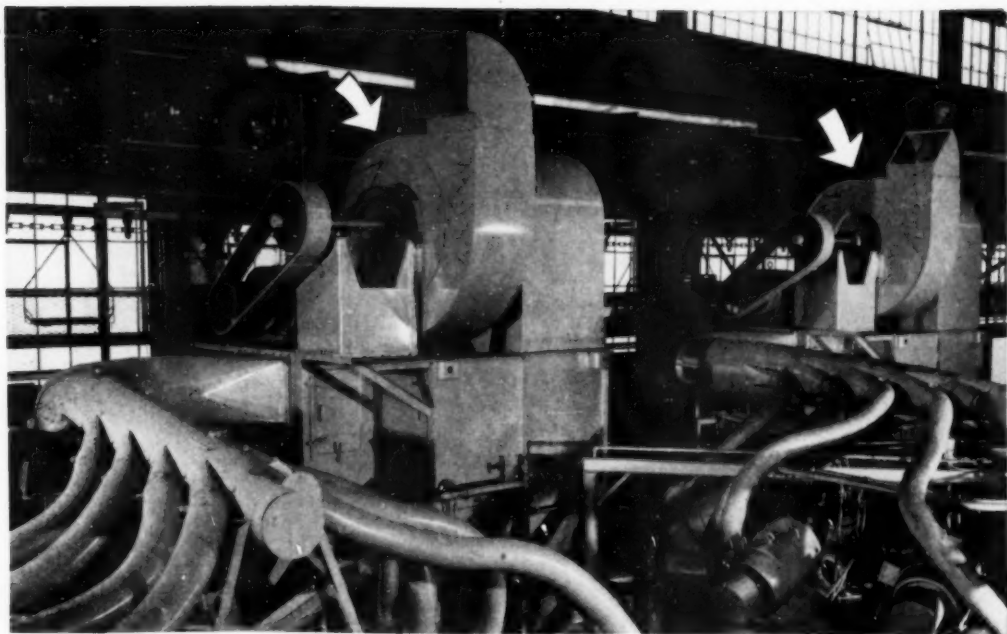
### AFFILIATES:

Conco Building Products, Inc. — Brick, Tile, Stone  
Conco Materials Handling Division — Cranes, Hoists

## Field Controls are precision instruments

In the testing laboratory or in your customer's home a heating plant operates more efficiently when draft is controlled by a Field Draft Control. The Field Control is a precision instrument manufactured to the most rigid specifications for durability, sensitivity, accuracy. This is important when you consider that, as a rule, for every 1/100" of excess draft there is a 1% fuel waste in the average installation. To keep customers sold, to cut service calls, dealers depend on Field. Standardize on Field Draft Controls for maximum heating plant efficiency.





## Another Clarage Installation in One of America's 97\* Largest Industrial Enterprises

**\* 97**  
**OF AMERICA'S**  
**100 LARGEST**  
**CORPORATIONS**

*are users of Clarage equipment . . . This wide acceptance denotes the high quality and reliable performance of Clarage products.*

Above you see two of the twelve Clarage Improved Exhausters on a vital-to-production dust collecting job in the Monroe, Michigan plant of the Ford Motor Company.

These twelve fans operate in connection with twelve American Air Filter Company's Roto-Clone installations.

Ford Motor Company has used Clarage equipment for over a quarter century.

Counting all of this Company's plants, well over a thousand Clarage fans are now handling the many and varied air handling requirements of this leading automotive and defense materiel manufacturer.

You can RELY on Clarage equipment to give you economical service for a long time to come. CLARAGE FAN COMPANY, 631 Porter Street, Kalamazoo, Michigan.

You can Rely on...  
**CLARAGE**



Headquarters for  
Air Handling and  
Conditioning Equipment

SALES ENGINEERING OFFICES IN ALL PRINCIPAL CITIES • IN CANADA: Canada Fans, Ltd., 4285 Richelieu St., Montreal





# 40 LB. COATED FOLLANSBEE TERNE METAL ROOFING *is available now!*

Follansbee Seamless Terne Metal, in the convenient 50-foot continuous roll, is again available in the popular 40 lb. TERNE COATING.

With a base plate of prime copper-bearing steel, 40 lb. Coated Follansbee Terne Metal assures *maximum roofing protection* at a moderate price for any kind of building.

This durable roll roofing is  
a top-quality material  
offering these advantages...

**STRENGTH** without excessive weight.

**PERMANENT PROTECTION.**

**DUCTILITY** . . . Terne is easy to apply.

**RESISTANCE TO ELECTROLYSIS** . . . Terne can be flashed with other metals.

**DESIGN AND COLOR HARMONY** . . . fits any architectural style.

**DON'T FORGET . . . USE FOLLANSBEE TERNE FOR:**



Order Follansbee Seamless Terne Metal from your favorite distributor today.

Roofing specifications and installation details are available in file form. Write to Follansbee *now* for complete information.



Builders and Architectural Files

## FOLLANSBEE STEEL CORPORATION

GENERAL OFFICES, PITTSBURGH 30, PA.

COLD ROLLED STRIP • SEAMLESS TERNE ROLL ROOFING  
POLISHED BLUE SHEETS AND COILS

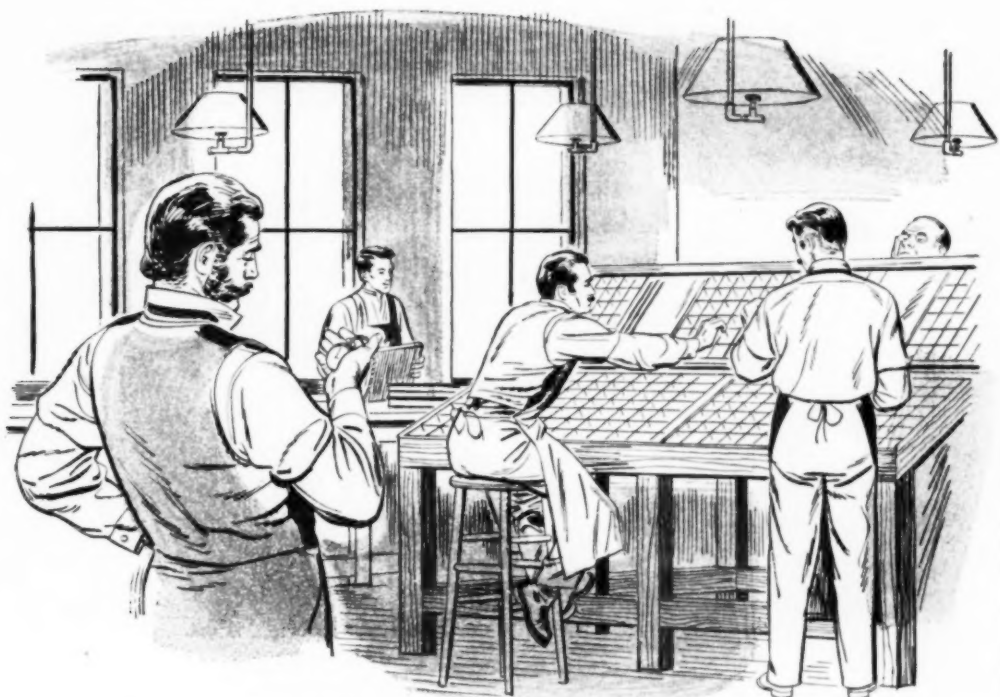
Sales Offices—New York, Philadelphia, Rochester, Cleveland, Detroit, Milwaukee. Sales Agents—Chicago, Indianapolis, Kansas City, Nashville, Los Angeles, San Francisco, Seattle, Toronto and Montreal, Canada.

Mills—Follansbee, W. Va.

FOLLANSBEE METAL WAREHOUSES

Pittsburgh, Pa. Rochester, N. Y. Fairfield, Conn.





## Up-to-the-Minute News vs. Deadlines!

Now, pages of type are set mechanically, in the time formerly required for just a few hand-set paragraphs. Thanks to the invention of power-driven typesetting equipment, and its ready adoption, your modern newspaper meets edition deadlines with ease and with all up-to-the-minute news.

In all walks of life electric motor power has lightened the burden of toil and made working hours more productive. Emerson-Electric experience, dating back to

1890, covers this entire era of mechanization progress. Emerson-Electric Motors bring to your product the benefits of this valuable experience plus an enviable reputation for dependability and efficiency.

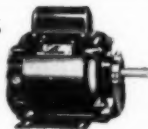
Consult with us, without obligation, about motors for your regular or new products. Standard Motors are made in horsepower ratings 1/20 to 5 H.P., and Hermetic Motor parts 1/8 to 15 H.P. Write...

**THE EMERSON ELECTRIC MFG. CO., St. Louis 21, Mo.**

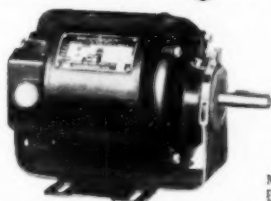
## MODERN BUSINESS IS POWERED WITH ELECTRIC MOTORS

### EMERSON-ELECTRIC MOTORS

For Belted Fans and Blowers



These motors incorporate all the electrical and mechanical specifications best suited for this service. Split-phase motors, available in 1/4, 1/2 and 1/3 h.p., with resilient mountings and automatic reset thermal protectors. For complete data write for Motor Bulletin No. M146.



Mergenthaler Linotypes have been powered with Emerson-Electric Motors since 1901.

**EMERSON**  
MOTORS • FANS



**ELECTRIC**  
APPLIANCES

LEADERS IN THE MOTOR AND FAN INDUSTRY SINCE 1890

# The U. S. Steel Supply team that gives you *personalized service*



*...our salesman*  
**puts this team to work for you!**

**S**UPPLYING YOUR STEEL requirements becomes our team objective when you tell your needs to your U. S. Steel Supply salesman. Behind your salesman is a team of technical experts, each one a specialist in his field... and your business receives the attention of every member of the team who can contribute to its progress.

What do you need? Steel? Tools? Special purpose equipment or machinery? Advice on working an unfamiliar type of steel? Help in meeting a pressing delivery date? Give your order to your U. S. Steel Supply salesman. He will see that it gets immediate attention from the U. S. Steel Supply specialists best qualified to serve you.

**YOUR "ONE CALL" SOURCE OF STEEL SERVICE**

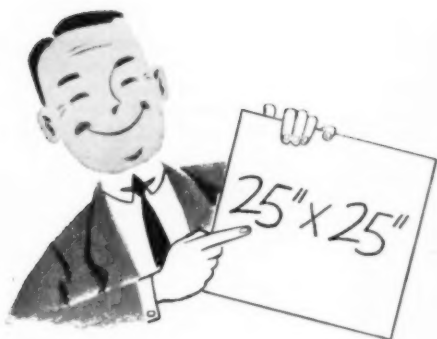
# U.S. STEEL SUPPLY



UNITED STATES STEEL SUPPLY DIVISION, UNITED STATES STEEL COMPANY  
HEADQUARTERS: 208 So. LA SALLE ST., CHICAGO 4, ILL. WAREHOUSES COAST-TO COAST

Warehouses and Sales Offices: BALTIMORE • BOSTON • CHICAGO • CLEVELAND • LOS ANGELES • MILWAUKEE • MOLINE, ILL.  
NEWARK • PITTSBURGH • PORTLAND, ORE. • ST. LOUIS • TWIN CITY (ST. PAUL) • SAN FRANCISCO • SEATTLE  
Sales Offices: INDIANAPOLIS • KANSAS CITY, MO. • PHILADELPHIA • PHOENIX • ROCKFORD, ILL. • SALT LAKE CITY • SOUTH BEND • TOLEDO  
TULSA • YOUNGSTOWN

**UNITED STATES STEEL**



**OPC-75H**—Especially designed for utility room, alcove, closet and basement installation... wherever space is limited. 67½" high, takes only 25 x 25 in. floor space.

## Meet the new Delco-Heat Oil-Fired Conditionairs!

**OPC-75LD**—Ideally suited for basement installation. Blower filter unit is enclosed in cabinet housing. 49" high, takes 25 x 42½ in. floor space.



**OPC-75HR**—Popular counterflow model for homes without basements. Features a downward flow of air into ducts installed in concrete slab or below the floor. 72½" high, takes only 25 x 25 in. floor space.

**Greater eye appeal! More compact!**  
**"Packaged" for easier handling**  
**and quicker installation!**

Here they are—newly styled for greater eye appeal, the Delco-Heat OPC-75 series Conditionairs. Completely automatic, oil-fired forced warm air furnaces... designed and engineered especially to meet the space-saving requirements of today's popular-sized home.

With an output rating of 75,000 Btu per hour, these units are "packaged"—for quicker, less expensive installation.

Streamlined jackets have new eye-appealing smartness that gives the entire heating "package" greater sales appeal. Built-in quality, General Motors' manufacturing experience and low competitive prices make these Delco-Heat OPC Conditionairs real profit makers.

**For a good deal  
DEAL WITH DELCO**

**GENERAL MOTORS  
DELCO-HEAT**

DELCO APPLIANCE DIVISION, Dept. AA  
General Motors Corporation, Rochester 1, N. Y.  
Please send me information on the new OPC-75 Conditionairs!

Name.....  
Firm Name.....  
Address.....  
City..... Zone..... State.....

# "We consider it a necessary part of every oil burner we install"

— says Jack Callan, leading New England sales manager, about the Honeywell Delayed-Opening Oil Valve



Jack Callan, right, Clifton Sumner Coal Co., with Honeywell Salesman Frank Hicks.

## Always use a Honeywell Delayed-Opening Oil Valve on your installations

Virtually eliminates the last trace of smoke at starting and stopping points; cuts down on service calls because of improved burner operation! Reduces need for cleaning, promotes better efficiency, decreases fuel bills. Can be installed on existing high-pressure burners. For complete information on this valve and on the new Honeywell *Dribble-Proof* Oil Valve, call your local Honeywell office. Or write Honeywell, Dept. AA 11-213, Minneapolis 8, Minnesota.

MINNEAPOLIS  
**Honeywell**

*First in Controls*

"Our service manager and his men are really sold on the Honeywell Delayed-Opening Oil Valve. They actually do a sales job themselves, on their own hook, on every service call they make.

"And it's easy to see why. This little valve improves oil burner operation all around. It helps prevent the formation of carbon deposits, gets that burner starting faster, cutting off quicker.

"It cuts oil burner service calls *way down*. It saves our service department work, which saves our company money.

"The oil burner man who isn't familiar with the V4001 just isn't keeping up with his business. He just isn't interested in better satisfying his customers while cutting his own operating costs.

"We would like to see every burner equipped with a Honeywell Delayed-Opening Oil Valve."

Take a service tip from Jack Callan! This Worcester sales manager knows his business. He uses the V4001 to save his company money and service grief. It can do the *same* for you!



*Another Plus-Profits  
Product from Honeywell*







## ASSOCIATION ACTIVITIES



### Coming Events

- Dec. 3-4 — National Warm Air Heating and Air Conditioning Association 39th Annual Convention. Sheraton-Gibson Hotel, Cincinnati. George Boeddener, Managing Director, 145 Public Sq., Cleveland.
- Jan. 18-21 — New York State Sheet Metal, Roofing & Air Conditioning Contractors Association, Annual Convention. Statler Hotel, Buffalo. Clarence J. Meyer, Executive Secretary, 567-69 Genesee St., Buffalo 4.
- Jan. 26-28 — National Heating Wholesalers Association, Inc., Annual Meeting. Congress Hotel, Chicago. Stuart Rambo, Executive Secretary, 637 Union Commerce Building, Cleveland 14.
- Jan. 26-29 — American Society of Heating and Ventilating Engineers, 59th Annual Meeting. Conrad Hilton Hotel, Chicago. A. V. Hutchinson, Secretary, 62 Worth St., New York 13.
- Jan. 26-30 — 11th International Heating & Ventilating Exposition (The Air Conditioning Exposition). International Amphitheatre, Chicago. Charles F. Roth, Manager, International Exposition Co., Inc., Grand Central Palace, New York 17.
- Feb. 5-6 — Sheet Metal and Warm Air Heating Contractors' Association of Indiana, 35th Annual Convention. Hotel Severin, Indianapolis. Frank E. Anderson, Executive Secretary, 439 S. 17th St., Terre Haute.
- Feb. 9-11 — Sheet Metal Contractors' Association of Wisconsin, Inc., Annual Convention. Schroeder Hotel, Milwaukee. I. F. Kanitz, Executive Secretary, 225 E. Michigan St., Milwaukee 2.
- Feb. 23-25 — Ohio Sheet Metal Contractors' Association, Annual Convention. Mayflower Hotel, Akron.
- May 4-6 — Sheet Metal Contractors' National Association, Annual Convention. Jung Hotel, New Orleans. J. D. Wilder, Executive Secretary, 170 Division St., Elgin, Ill.

### Wisconsin Contractors in Membership Drive

THE DISTRICT Chairmen of the Sheet Metal Contractors' Association of Wisconsin, Inc., are making an effort to gain 50 new members each, for this year. This or any part of the quota will be presented at the State Convention to be held in February.

A combination of direct mail solicitation, staff solicitation, and individual member solicitation is being used. A membership application form has been issued which lists features of the organization which would interest all Wisconsin sheet metal or heating contractors.

### Furnace and Roofing Men Hear Talk

THE MASTER SHEET METAL FURNACE and Roofers Association, at a recent meeting, heard a talk on advertising given by its program chairman, Wm. C. Schmitt. The talk stimulated considerable interest and discussion.

A clambake was held a few weeks later; the association reports some of the golf scores as "fantastic". (There was no official score keeper).

### Cook County Group Plays Golf

MEMBERS AND guests of the Sheet Metal Contractors' Association of Cook County enjoyed beautiful weather and a good dinner at the Edgewood Valley Country Club recently. Art Wagner of the Lionel Vallas organization took first prize under the Peoria handicap scoring, with a blistering 77.

### Institute Discusses Important Matters

A RECENT MEETING of the Roofing and Sheet Metal Crafts Institute, New York City, featured a discussion of important matters pertaining to the industry. Typical questions discussed were: "How much of an increase in hourly pay can you give a workman without placing yourself in jeopardy?" "What is overtime? How is it reckoned, how audited, and by whom?"

Conclusions arrived at provided much practical help for the members present.

### Michigan Association Officers On the Go

ELMER STAFFORD, president of the Michigan Heating and Sheet Metal Association, traveled throughout the West this summer. A former president, Marshall Van Assche, toured Europe with his wife, father, and mother. He

(Please turn to page 134)

# EQUIPMENT DEVELOPMENTS

The latest information on manufacturers' developments is presented here with brief summaries of the applications of these products. For new literature giving product information which is available, see page 140.

## Gas Burners

POWER-FLAME series gas burners in eight models with 35,000 to 3,000,000 Btu input — Simon Mfg. Co., Kansas City, Mo. It utilizes a "tube within a tube" principle for producing a soft, active flame with high



radiation qualities, and a new method of flame retention to eliminate pulsation. On the larger units, a safety device permits both pre-purge and post-purge periods to clear the heating plant of fuel. All controls are burner mounted. AA 1

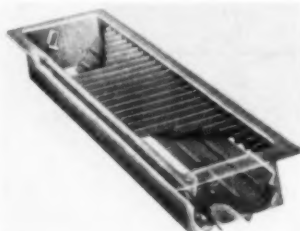
## Compressors

AD METER-MISER sealed reciprocating compressors, with models ranging in size from 1.3 to 7½ hp — Frigidaire Div., General Motors Corp., Dayton. They are offered in four types: air cooled, water cooled, combination air and water cooled, and for use with evaporative condensers. All types have direct drive operation. A load selector built into the pistons can be adjusted to meet the load requirements of each application. AA 2

## Floor Diffusers

REDESIGNED LINE of floor diffusers now available in three new sizes — Lima Register Co., Lima, Ohio. New features (in all models) include specially notched diffusion vanes to facilitate resetting of the directional air diffusion, and a damper locking de-

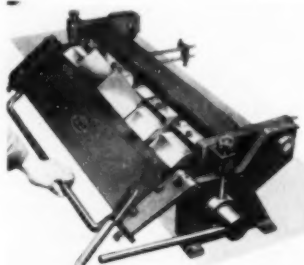
vice to prevent accidental changing of the balance damper position. The



three new sizes are 4 x 10, 4 x 12, and 4 x 14 in. These floor diffusers are designed especially for perimeter and small pipe installations AA 3

## Bending Brake

BENCH MODEL, hand operated box and pan brake (size BB-2) for bending sheet metal and steel plate — Dreis & Krump Mfg. Co., Chicago. It is designed for bending sheet metal up to 18 gage and 24 in. long. The bending edge is made up of fingers in graduated widths fitted to a bar. These are adjusted or removed as re-



quired. They can be used in any combination along the bending edge for folding, box and pan work, and a variety of straight bending operations. The cam-action clamp is adjustable for different thicknesses of material. Angularity of bend is controlled by an adjustable stop, maximum angle being 135 deg. AA 4

## Coupling

UNIVERSAL COUPLING which operates on the ball and socket principle, for all types of machinery requiring

coupled shafts, either at an angle or straight line. — B. M. Root Co., York, Pa. The simplified construction comprises a ball fitting into a socket with the stress of power trans-



mission absorbed by two oversize keys. The entire assembly is held in place by a rolled and crimped cap. A reservoir in the base of the socket retains lubricant for slow feeding. The unit is designed for a maximum deflection of 30 deg. and to be especially effective at medium and high speeds. AA 5

## Roof Ventilator

AUTOMATIC, FAN-POWERED Airjet roof ventilator — Hartzell Propeller Fan Co., Piqua, Ohio. In outward appearance, it is a box built of galvanized copper-bearing steel. There are no counterweights. Two hinged aluminum panels, which form a weathertight peaked roof, open automatically when the fan is started and close when it stops. When they are open, the air stream prevents the entry of rain or snow. The ventilator is designed especially for clearing fumes and heat from above furnaces and industrial equipment. AA 6

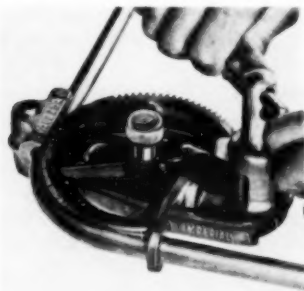
## Solenoid Valves

SOLENOID VALVES now offered with adjustable timing on the closing stroke for pressures up to 300 lb per

sq. in. — Atkomatic Valve Co., Indianapolis. This timing can be so regulated that complete closing of the valve would take a maximum of 30 seconds. This feature is designed to eliminate shock on supply lines, as in hydraulic operations. AA 7

#### Gear-Type Tube Bender

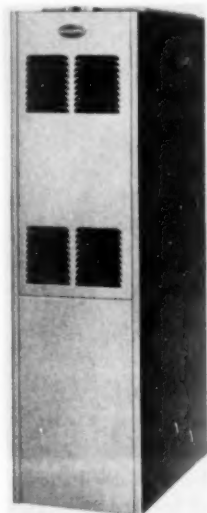
TUBE BENDER designed for any type of tubing, including hard drawn copper and hard temper steel — The Imperial Brass Mfg. Co., Chicago. It is of the gear type, is compact, and can be positioned on the tube at any point where a bend is desired.



It can make bends when one end of the tube is connected, and can be used for right or left hand, return, offset, and right angle bends. Benders are portable, or can be clamped in a vise or bolted to the bench. They are available for tubing from  $\frac{3}{8}$  to  $1\frac{1}{4}$  in. OD, a separate one being required for each size. AA 8

#### Forced Air Furnace

FORCED AIR FURNACE (Type 100 FA) with capacity of 100,000 Btu, designed for medium sized homes — Utility Appliance Corp., Los Angeles. The unit can be placed in out-of-the-way corners, since it takes up a floor



space of  $19 \times 25\frac{1}{2}$  in. It is quiet in operation, incorporating the "Sy-Lent" heat exchanger with a gooseneck design which minimizes expansion-contraction noises, and a drive blower assembly in which the electric motor shaft is attached directly to the blower shaft, eliminating belts or pulleys. The unit services homes of 1200 to 1500 sq ft. AA 9

#### Year 'Round Conditioner

YEAR 'ROUND Weathermaker air conditioning unit for homes up to 1200 sq ft in size — Carrier Corp., Syracuse. It provides two tons of cooling and dehumidifying capacity plus winter heating in a single cabinet which is 5 ft high and requires a floor space of about  $3 \times 3$  ft. It will easily handle the air condition-



ing necessary in an average low-priced three bedroom home in any area of the country, the manufacturer states. The unit when installed will cost between \$700 and \$1000 more than a good forced warm air heating system, according to the manufacturer. It is designed to be placed in a closet, in the cellar, garage or the attic. Heating may be accomplished with any type of gas,

*This coupon is for your convenience in obtaining more information about any of the equipment mentioned in this issue or copies of the literature offered in the readers' service section.*

*Keep your record of sources of supply up to date by adding the new products and companies listed here to your January 1952 AMERICAN ARTISAN annual directory section.*

#### FOR YOUR CONVENIENCE

11-52

American Artisan  
6 N. Michigan Ave., Chicago 2, Ill.

Please ask the manufacturers to send me full particulars about the equipment mentioned under the following reference numbers in Equipment Developments and New Literature

(Circle each number in which you are interested)

#### Equipment Developments

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26				

#### New Literature

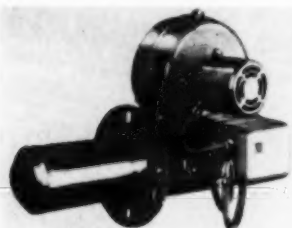
101	102	103	104	105		107	108	109	110
111	112	113	114	115	116	117	118	119	120
121	122								

Name \_\_\_\_\_ Title \_\_\_\_\_  
 Company \_\_\_\_\_  
 Address \_\_\_\_\_  
 City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_

or with oil. Air enters the unit from the side, back or bottom, and can be distributed in four directions. AA 10

#### Power Gas Burner

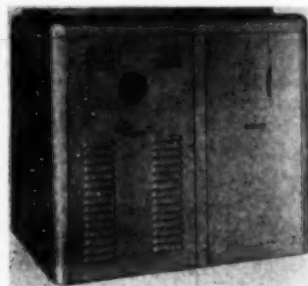
SYNCO-FLAME power gas burner designed to fit in vestibules of most gas and oil burning furnaces, which operates independent of chimney draft — Synchronous Flame, Inc., Chicago. The burner rapidly attains incandescence and transfers radiant heat to the heating surface of the appliance, the manufacturer states.



Multiple air ports are designed to assure proper adjustment, mixing of air and fuel, and good flame retention to the nozzle. A mercury switch, actuated by fan air pressure, assures sufficient air for combustion before the main gas valve can open. Automatic safety shutoff is provided. Three models range in capacity from 75,000 to 500,000 Btu, and are available with either leg or flange mounting. Units will burn either natural, manufactured, or L.P. gases. AA 11

#### Heating Unit with Humidifier

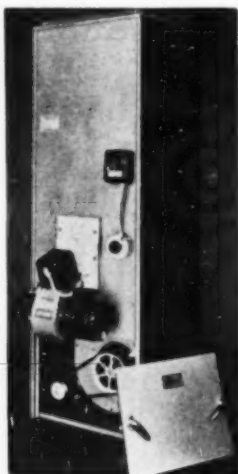
"Lo-Boy" HEATING UNIT featuring a controllable humidifier, air washer and purifier—Century Engineering



Corp., Cedar Rapids, Ia. A humidistat, placed near the thermostat, permits accurate humidity control by the user, according to the manufacturer. AA 12

#### Oil or Gas-Fired Furnace

MODEL 90 gas or oil furnace, in Highboy or Counterflo types, for medium and large size ranch style and other basementless homes—The Firewel Co., Buffalo. It is especially de-



signed for perimeter heating, to provide even heat and warm floors, but can also be used for standard installations. Btu output at bonnet is 90,000, and air output, 950 cfm. Dimensions are 22 x 22 x 72 in. high. Features include a brick-lined combustion chamber (oil-fired model), an internal radiator, a 14 gauge heat exchanger, and top discharge of flue gases. AA 13

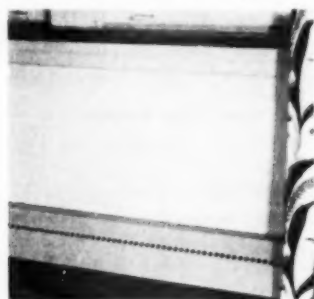
#### Felt Tape

PRESSURE-SENSITIVE felt tape (with adhesive on one side) now available with a duo-purpose adhesive which provides for permanent attachment when desired — Spring Packing Corp., Chicago. It is designed to adhere under light finger pressure to all surfaces — metal, glass, wood, ceramics, etc. For permanent bond, the adhesive is moistened with a liquid reactivating agent. The tape seals against dust, air, fumes and moisture; is intended to eliminate squeaks and rattles; to resist flame, oils, etc. AA 14

#### Baseboard Heating Unit

THERMO-BASE baseboard heating unit, designed to assure uniform distribution of warm air — Gerwin In-

dustries, Michigan City, Ind. The manufacturer states that with these units, floor to ceiling temperatures



vary less than 2 to 4 deg and return air is only 2 to 4 deg below room temperature. AA 15

#### Skylight

DOMELIGHT PLEXIGLAS skylight for commercial and domestic applications — E. Van Noorden Co., Boston. It is designed with two types of plexiglas: clear colorless, and white translucent. The first admits out-



door light into walled-in areas; the second provides a soft, glare-free light and assures privacy. The skylights are supplied with their own metal base frames in galvanized iron, aluminum or copper, and are provided with a fireproof outer apron. The frame is equipped with screws and reinforced screw holes for outside fastening to the curb. The skylight is available in dimensions from 20 x 20 in. to 64 x 96 in. AA 16

#### Forced Air Furnaces

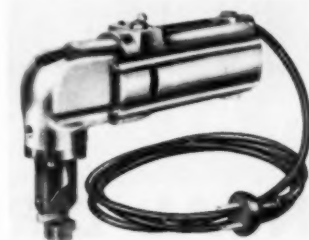
GAS-FIRED FORCED air furnaces in three types and 15 sizes — Timken Silent Automatic Div., Jackson, Mich. Included are low furnaces for basements, high furnaces for basement or utility rooms, and counterflow units for small, basementless homes, especially those with perimeter heating systems. The first two types are available in six sizes, with input capacities of from 75,000 to 200,000

Btu per hr. High units are 63 in. high, 29 in. deep, and have widths from 16 to 34 in. Low units are 41 in. high and 42 in. deep, with the same widths. Counterflow furnaces, offered with capacities from 75,000 to 125,000 Btu per hr. are 63 by 29 in., with widths from 12 to 23 in. AA 17

### Power Punch Presses

TWO POWER OPERATED punch presses, each with a rated capacity of 5 tons — O'Neil-Irwin Mfg. Co., Lake City, Minn. Both presses are designed to punch a 4 in. diameter hole in 16 gage sheet steel, or a 3½ in. hole in

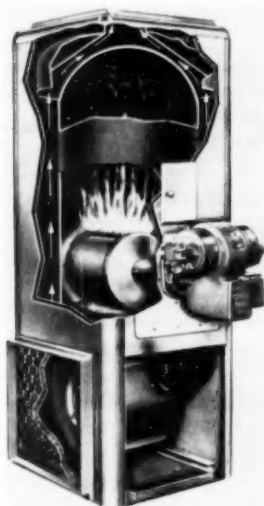
Fenway Machine Sales Co., Inc., Philadelphia. It also cuts holes in tubes and ducts without damaging the original contour, the company



states. Minimum cutting radius is 7/8 in. The tool can be bench mounted, and weighs 7½ lb. AA 19

### Forced Warm Air Furnaces

CONDITIONAIR OIL-FIRED forced warm air furnaces in three new models, for use with conventional, high velocity, or perimeter warm air distribution systems — Delco Appliance Div., General Motors Corp., Rochester, N. Y. All three models are rated at 75,000 Btu per hr output at the plenum. The high model, for utility



room, alcove or basement installation, is 25 in. square and 67¾ in. high. Knockout panels permit attachment of filter assemblies to either side, and a floor filter assembly also is available. Another model, for basement installation, is 25 in. wide, 42½ in. deep and 49 in. high. The

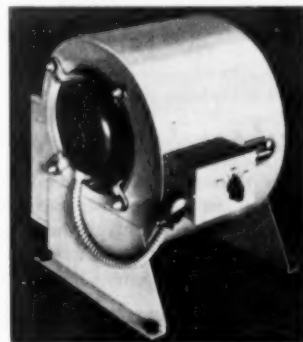
third is a counterflow model for use with warm air perimeter systems in basementless homes. AA 20

### Magnetic Lifter and Feeder

MAGNETIC HAND tool for feeding steel into punch presses — Magnetool Div., Multifinish Mfg. Co., Detroit. It can be quickly adjusted for pieces of almost any size or shape, and the self-aligning magnetic blocks overcome irregularities, dirt and chips, the manufacturer states. The tool is designed to release instantly at a slight twist of the wrist, to remove or insert parts in the press, to separate stacked sheets, etc. AA 21

### Direct Drive Blower

DIRECT DRIVE blower that can be designed into lowboy, highboy, counterflow or suspended furnaces up to 65,000 Btu, in any position desired — The Brundage Co., Kalamazoo, Mich. The motor is designed to op-

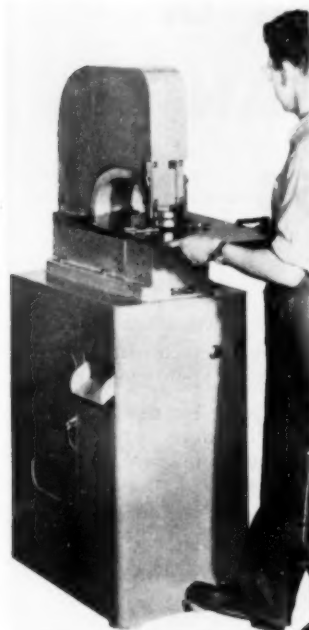


erate in any position, shaft down, shaft up, horizontal, or any intermediate position. The blower wheel is mounted directly on the motor shaft. There are no belts or pulleys. Five blower speeds are available through a speed selector switch. The blower is UL approved. AA 22

### Gutter Couplings

GUTTER COUPLINGS which can be adjusted in ¼ in. steps to fit all half-round gutter and mitres from 4 in. through 6 in. sizes — Melaway Corp., Brandon, Wis. The strap is fitted to the gutter size, and four prongs are squeezed to fit with a plier. The bridge is then folded or clipped to fit the gutter. AA 23

(Please turn to page 138)



3.16 in. steel plate. Each model has a deep throat, and will operate at 180 strokes per minute, according to the manufacturer. Each occupies a floor space of 17 x 28 in., and can be used without being bolted down. One unit weighs 540 lb., the other, 715 lb. AA 18

### Portable Nibbler

LITTLE WONDER portable nibbler designed to cut through 14 gage stainless steel, CR steel, galvanized iron, and softer materials in proportion without distortion on either side —



# COMING...

## **THE ANNUAL DIRECTORY and SHOW NUMBER of AMERICAN ARTISAN JANUARY — 1953**

### *Subscribers . . .*

Here's your 1953 Buying Guide—completely up to date in its lists of manufacturers of every kind of product for warm air heating, residential air conditioning, sheet metal contracting—their street addresses—trade names.

Your issue will serve you throughout the important year ahead, whenever you're looking for information on who makes a product, where he's located, whose products various trade names represent.

In addition, many manufacturers, in their advertis-

ing copy, will give you complete data on their lines, product specifications, applications, etc.

Months of work have gone into checking manufacturers' equipment literature, correcting addresses, adding new names in the field . . . all to give you the most complete and accurate product reference book possible.

Be sure your subscription is renewed, if it is expiring soon, so you won't miss your copy of our important Directory and Show Number.

### *Advertisers . . .*

You can get in on this important buying guide service by including in your advertising copy complete information on ALL the products you make for the field, their specifications, who handles them in the important markets across the country. Keep this in mind in getting your copy ready for the December 15 closing date.

**ANOTHER FEATURE OF THIS ISSUE WILL BE A SPECIAL SECTION ON THE 11TH HEATING & VENTILATING EXPOSITION IN CHICAGO IN JANUARY — what's going on, what will be displayed.**

**LOOK FOR YOUR COPY OF THE JANUARY 1953 ANNUAL DIRECTORY AND SHOW NUMBER OF AMERICAN ARTISAN**

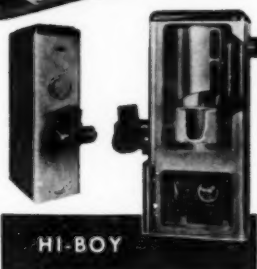


# BEAT ALL COMPETITION

WITH

## DELTA *Furnaces*

INTERCHANGEABLE OIL to GAS — GAS to OIL



HI-BOY

3 SIZES

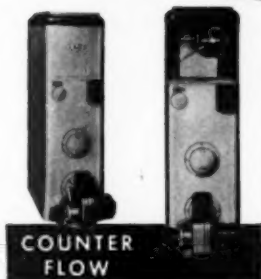
Versatile! Only 5' top to bottom — hides itself away in basement, utility room, or even a closet. One stock model with return at both sides and bottom. Three sizes—78,000, 90,000 and 110,000 BTU/HR at bonnet. Factory assembled — ready for installation.



LOW-BOY

3 SIZES

Popular style. Only 45" tall — 20" wide! Featuring DELTA gun-type flanged oil burner, built-in refractory combustion chamber, heavy gauge heat exchanger and large sirocco blower. Three sizes—81,000, 93,000 and 113,000 BTU/HR. Factory assembled — ready for installation.



COUNTER  
FLOW

3 SIZES

Gaining popularity in slab constructed houses and crawl-space bungalows. Only 5' tall - 20" wide - 28" in depth - will even fit in a closet! Front or rear flue outlet optional. Three sizes - 78,000, 90,000 and 110,000 BTU/HR. Factory assembled.

## AMERICA'S *Fastest Growing* FURNACE LINE



NEW GUN-TYPE  
FLOOR FURNACE

At Last! A fully automatic floor furnace with a trouble-free gun-type burner—Model FL 80—80,000 BTU/HR output! Measures 24" x 32" x 29½" deep. Factory assembled—ready for installation.



SUSPENDED  
HORIZONTAL

Excellent for special-purpose heating applications - attic, low-basement, ceiling and underneath the floor. Four sizes—75,000, 110,000, 160,000 and 210,000 BTU/HR output. Factory assembled with hanger posts or base flange-stands.



GRAVITY  
FURNACE

For LOW price homes! Ideal as a replacement furnace! Model GA 75—75,000 BTU/HR output. Measures 52" tall—22" wide—28" in depth. Efficient 3-pass heat exchanger. Factory assembled with full-size bottom plate.

WRITE OR WIRE NOW FOR PRICES AND COMPLETE DETAILS

### *Delta Heating Corporation*

TRENTON 8, NEW JERSEY

**FEDERATED'S  
CASTOMATIC  
SOLDER  
GIVES YOU**



**BETTER JOINTS  
FASTER SOLDERING  
UNIFORM MELTING-POINT  
NO HARD SPOTS  
NO SPUTTERING**

CASTOMATIC Solder is machine-cast . . . produced *only* by Federated Metals on patented electronically controlled machines . . . while ordinary bar solder is hand-cast in open molds.

CASTOMATIC Solder is a dross-free solder . . . harmful oxides are excluded from the product because air is kept from the molten metal in the pressurized casting system. This means no hard spots.

CASTOMATIC Solder is extra fine-grained . . . has no voids to cause sputtering or segregation to make melting uneven, thereby slowing down your work.

CASTOMATIC Solder of a given analysis always melts at the same temperature . . . assures faster, easier work.

CASTOMATIC Solder is available in all standard sizes and compositions through your local jobber.

*Federated Metals Division*



AMERICAN SMELTING AND REFINING COMPANY • 120 BROADWAY, NEW YORK 5, N.Y.

# If You Wish You Were In Another Business



## Read About The Chrysler Airtemp *Comfort Zone* Line

If you're concerned over slumping sales, slow-moving inventories, unhappy customers, you ought to see what Chrysler Airtemp offers. Here are samples:

**PRE-SOLD PROSPECTS**—Chrysler Airtemp is a world-famed and respected name. This public acceptance is further enhanced by the most consistent advertising program in the heating industry. There's a ready, waiting market for Chrysler Airtemp products.

**A COMPLETE LINE OF PRODUCTS**—Chrysler Airtemp manufactures *both* heating and cooling equipment for the home. This gives you a two-pronged sales weapon. For every furnace installation you sell now, you create a prospect for adding a cooling unit later.



**THE MOST LIBERAL COOPERATIVE ADVERTISING PROGRAM IN THE HEATING INDUSTRY**—You pay just one-half of the cost for your local-level advertising in any accepted medium; radio, television, newspaper, direct mail, outdoor, etc.

If you're interested in signing up for the best deal you ever had, mail coupon and we'll rush details.

**Airtemp Division of Chrysler Corporation** AA-11-52  
**P.O. Box 1037, Dayton 1, Ohio**

I would like to know more about Chrysler Airtemp's franchise arrangements.

Name

Address

City  Phone

Zone  State

# Modernize these 2½ million oil burners with Webster Electric Fuel-units NOW!



Of the five million oil burners in use today, at least half . . . 2½ million . . . are over ten years old. Here is your key fuel-unit replacement market for 1952!

Webster Electric Fuel-units, whose basic design permits complete interchangeability on all types of oil burners, are your profit-building answer to this huge market. Their adaptability to all pressure-type burners means that you can do a maximum replacement business with a minimum of fuel-unit inventory and financial investment.

Webster Electric Fuel-units have an old and honored name in the business. For many years they have been first choice of leading oil burner manufacturers.

They are easy to sell . . . easy and convenient to service. Our Authorized Service Stations are ready to cooperate with dealers at all times. Ask your Service Station about our sensational new Dealer Package—its wide use will surprise you!



Old-Timer Serviceman says—  
"For easy servicing, Webster  
Electric Fuel-units are tops!"

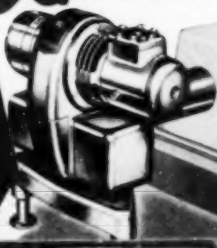
**WEBSTER**  **ELECTRIC**  
RACINE • WISCONSIN

"Where Quality is a Responsibility and Fair Dealing an Obligation"

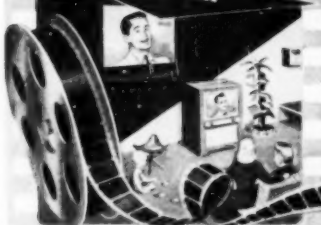


Use this sensational

# OIL-O-MATIC SEE-SELL Sales Team!



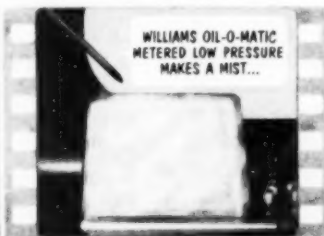
Most dramatic selling tool in the entire history of the industry! Clear plastic "fire boxes" (no fire, however) show actual results of High Pressure vs. Metered Low Pressure. Sells prospects instantly!



Black-and-white 16 mm film for TV, and a spectacular full color 35 mm movie trailer, whet prospects' interest, pull 'em into your store to see the "live" action!

Film tells whole story in just 50 seconds—which allows 10 additional seconds to make it YOUR film through powerful slide identification at beginning and end.

Homeowners (your prospects) learn the basic principles of burning oil. Explanation is short, simple, makes people want to learn more—direct from YOU!



**Come in! See this live demonstration at**  
**YOUR NAME**  
**and ADDRESS**  
**HERE\***

No trickery here! An honest "movie" of oil and air being mixed to burn. One of our own high pressure units in actual operation vs. our Metered Low Pressure!

The difference is amazing! Few thinking viewers will buy ANY oil-burning equipment until they learn *more*—from YOU! Stops your competition in its tracks!

\*You cannot get or use either of these two dramatic sales clinchers unless you are a Williams OIL-O-MATIC dealer. Mail fact-finding coupon RIGHT NOW!

**IT PAYS TO BE AN  
OIL-O-MATIC DEALER**



WILLIAMS OIL-O-MATIC DIVISION  
**Eureka Williams**  
CORPORATION  
Bloomington, Illinois

Better Products. Better Made... *for better living!*



Williams OIL-O-MATIC Division  
Eureka Williams Corporation, Bloomington, Illinois

Please RUSH facts about money-making  
Williams OIL-O-MATIC franchise and its  
availability here.

Company name \_\_\_\_\_  
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City \_\_\_\_\_  
Individual's name \_\_\_\_\_ AA-11



**OIL-O-MATIC**  
Home Heating



**GAS-O-MATIC**  
Home Heating



**EUREKA**  
Vacuum Cleaners



**DISPOS-O-MATIC**  
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## Choose **CRESCENT** or **CRESTOLOY**

● Since more Crescent and Crestoloy Adjustable Wrenches are sold today than any other brand, an explanation of the differences in these two famous Crescent tools may be appropriate.

CRESTOLOY Wrenches are forged from a special alloy steel permitting thinner, trimmer design with greater strength and less weight than conventional types. They are available in Single End patterns, 4" to 24" size. Double-end in four models combining 4-6; 6-8; 8-10; 10-12 inch sizes.

The 15", 18" and 24" sizes, available in Single End pattern only, are distinguished by their tapered handles. There is no stronger or finer Adjustable Wrench than CRESTOLOY.

CRESCENT Wrenches are forged from selected carbon steel and specially heat-treated to increase their toughness and durability. Due to their lesser cost and relatively great strength, they are widely used in industrial and service operations where thinness is not essential. Available in Single End Patterns, 4" to 18".

Both Wrenches represent the best in design and workmanship, and carry the same guarantee.



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This new 20 page booklet provides many useful how-to-do-it ideas for both amateurs and professional mechanics, as well as basic information on the proper selection, use and care of hand tools. 93 illustrations. Write today.

## CRESCENT TOOLS

*Give Wings to Work*

*Sign of the Artisan  
Symbol of Excellence*

Crescent is our trade-mark, registered in the United States and abroad, for wrenches and other tools. Sold by leading distributors and retailers everywhere and made only by **CRESCENT TOOL COMPANY, JAMESTOWN, NEW YORK**

# Announcing... *Auto flo's* DRIP-PROOF Humidifier Plate

THIS IS  
*Auto flo's*  
Stainless Steel  
**DRAIN CLIP**  
that Prevents  
**WATER DRIP**

**DRAIN CLIPS  
PREVENT This:**

Pat. Pending

**ONE YEAR FACTORY  
Guarantee  
ON ALL  
PARTS**

**WATER  
DRAINS  
into PAN  
BELOW**

**NO FLOAT**

**NO DRIP**

**NO CLOG**

Laboratory tests prove that under certain conditions, all humidifier evaporating plates will drip. Auto-Flo's evaporating plates, equipped with new stainless steel drain clips, eliminate any possibility of dripping.

**AUTO-FLO CORP.**

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Please send me full information on Auto-Flo "100" Automatic Humidifier.

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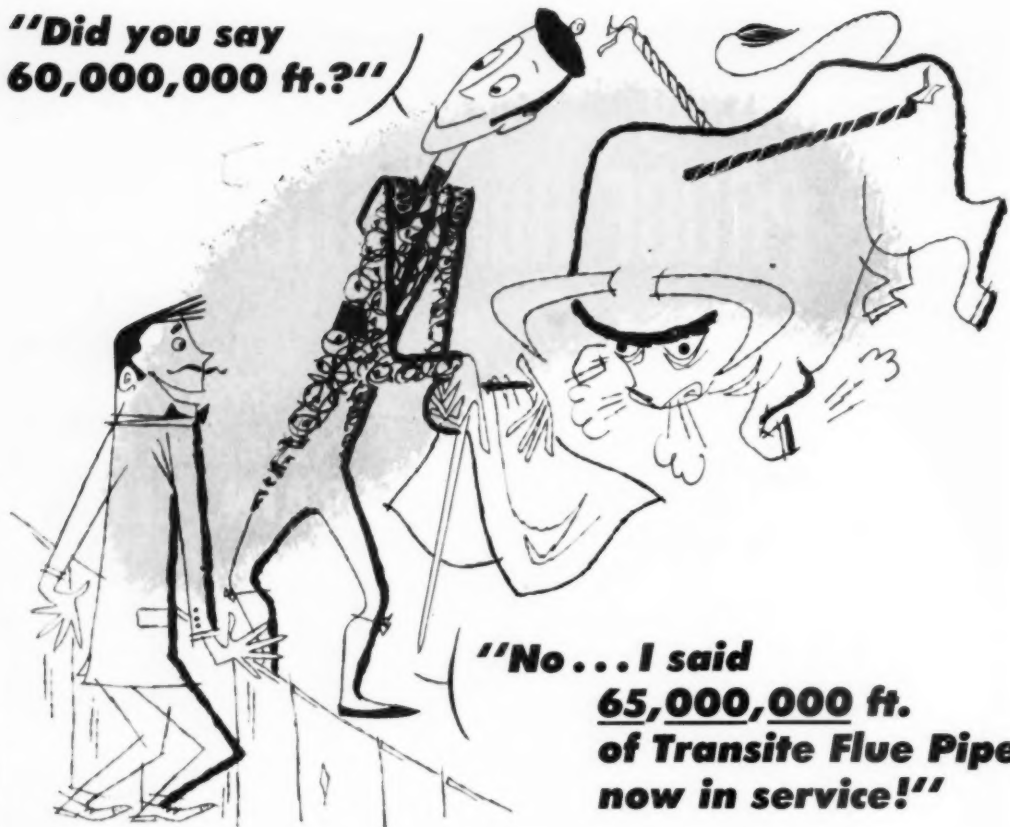
STATE \_\_\_\_\_

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Detroit 27, Mich.

**"Did you say  
60,000,000 ft.?"**



**"No... I said  
65,000,000 ft.  
of Transite Flue Pipe  
now in service!"**



**Y**OU CAN BE SURE that there are excellent reasons why this modern asbestos-cement flue pipe has been the leader for more than twenty years.

Ask the men who regularly install Transite® Flue Pipe why they—and their customers—prefer it. This is what they'll say:

1. **Transite Flue Pipe** does an efficient, dependable venting job that helps build reputations for quality work.
2. It **needs no crimping**, no hole-punching, no special tools, no nuts or bolts for making joints.

3. It **won't deform**, dent or bend out of shape... makes a rigid, solid, *safe* installation.

4. The **Transite tapered couplings** assure quick, positive alignment.

5. The **complete line** of Transite fittings meets any job requirement... makes it easy to follow approved venting practices.

Use Transite on your next job and prove to yourself that this modern flue pipe means more profitable gas venting jobs for you—and lasting satisfaction for your customers. For further details, write Johns-Manville, Box 60, New York 16, N. Y.

\*Reg. U. S. Pat. Off.

*Transite Flue Pipe is the only flue pipe for domestic gas appliances listed by Underwriters' Laboratories that has been continuously approved since 1932.*

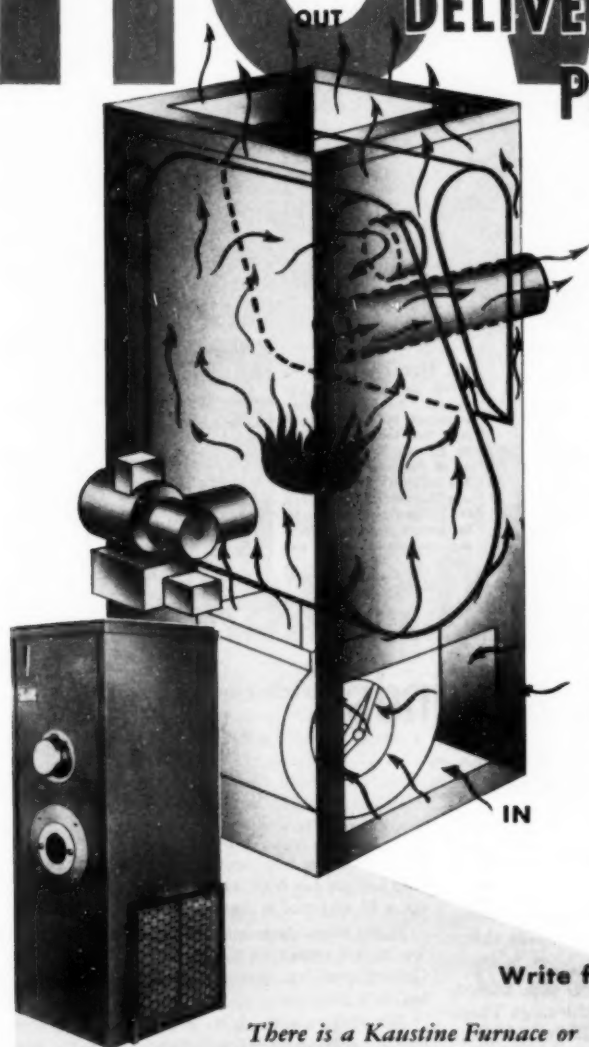


**Johns-Manville TRANSITE FLUE PIPE**

**FOR VENTING DOMESTIC GAS-BURNING APPLIANCES**

# HOW

## KAUSTINE'S "JERSEY 75" DELIVERS MORE HEAT PER FUEL DOLLAR



THE unique air flow of the Kaustine Heat Exchanger System shown in the phantom illustration is the reason for the "Jersey 75's" ability to produce maximum heat at lowest cost.

The controlled course of the air around the all steel welded tear drop Heat Exchanger and Economizer Unit, which utilizes the heat from stack gasses, enables the "Jersey 75" to develop a maximum of quick, even heat.

This is not the only feature that makes this Oil Fired Automatic Forced Warm Air Furnace such an ideal unit for small homes. It requires a minimum of installation time and takes only  $3\frac{1}{2}$  square feet of space. It is shipped from the factory completely assembled and ready for installation. A separate compartment is available to encase the burner.

The "Jersey 75" is also available as a "Counter-Flow" model for installation in slab or crawl space type homes. Weight 324 lbs.

Write for full information to Dept. A-11

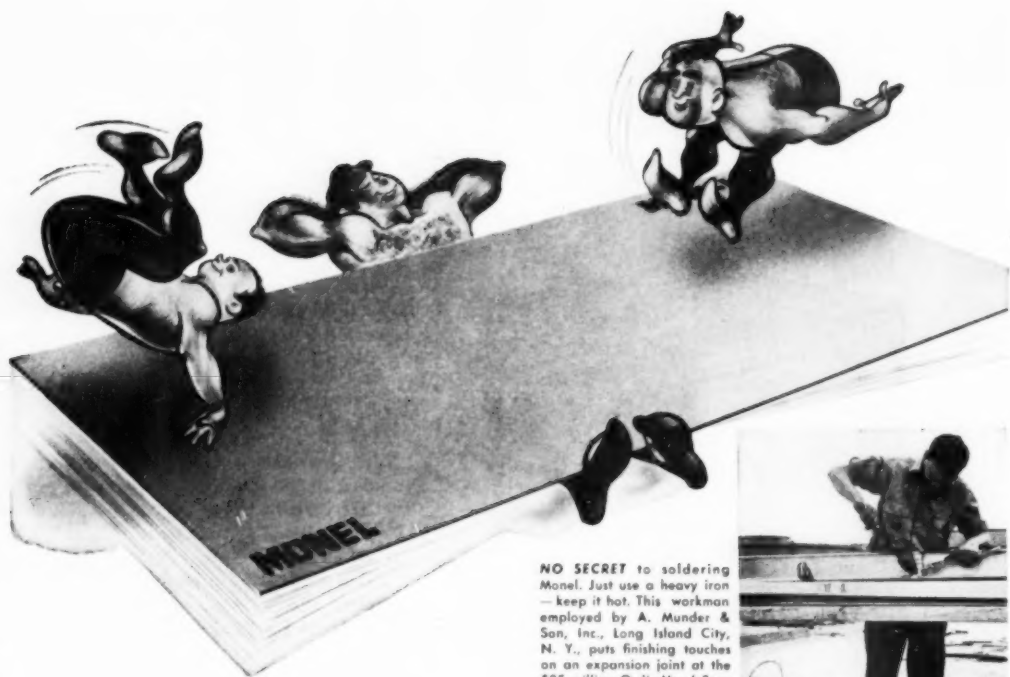
*There is a Kaustine Furnace or  
Winter Air Conditioner for every type of home.*



# Kaustine FOR SAVINGS

Modulated Warm Air Furnaces from 65,000 to 270,000 B. T. U.  
Septic Tanks ... Pressure Vessels ... Oil and Gasoline Storage  
Tanks ... Truck Tanks ... Custom Built Fabricated Equipment





**NO SECRET** to soldering Monel. Just use a heavy iron — keep it hot. This workman employed by A. Munder & Son, Inc., Long Island City, N. Y., puts finishing touches on an expansion joint at the \$25 million Owl's Head Sewage Disposal Project, Brooklyn, N. Y. Plant also uses Monel for gutters, waterstops, flashings, rainwater drains and fascia.



**A roofing sheet to remember...**

## because it takes all kinds of twists and turns

Soft-temper Monel® Roofing Sheet is easy to work with.

No problem at all to cut. And you can form Monel into intricate shapes — even make sharp bends — without cracking it.

You can do a neat soldering job with Monel, too, by pre-tinning the sheets in the shop. Then, when you make the actual installation, a heavy, hot iron is all you need to insure a tight, perfect seam.

With strong, corrosion-resisting Monel overhead, your customers get the kind of roof they

want. Summer heat and winter cold can't hurt it. And neither can high winds nor heavy loads. Once up, a Monel roof is there to stay!

Right now — because there's so much demand for nickel alloys in the defense program — the Government has stopped the use of Monel for building purposes.

But there's nothing to stop you from getting information about Monel. Send today for your free copy of the helpful bulletin, *Monel Roofing Sheet — Basic Application Data*. You can be sure the time will come again when its handy reference chart and time-saving tips will be needed.

**THE INTERNATIONAL NICKEL COMPANY, INC.**  
67 Wall Street, New York 5, N. Y.



# MONEL

"For the Life of the Building"



# AIR WALL\* Heating and Cooling



"LIKE APPLIANCES AND LANDSCAPING, year 'round air conditioning will soon be demanded by almost all homeseekers," says R. A. Gall, builder of thousands of Cleveland homes. "And because quality and sales appeal govern my choice of all that goes into my homes, I specify General Electric Air-Wall Heating and Cooling."



"GREAT DOOR-OPENER to builder business," says Jack P. Taus, G-E heating and air conditioning dealer. "Builders know the G-E Air-Wall System sells houses. Helps me close more heating sales, too!"

## "COOLING SOON TO BE NECESSITY," Says LEADING CLEVELAND BUILDER

ALL OVER THE COUNTRY, builders find that G-E Year-Round Air Conditioning with the Air-Wall System speeds home sales. In Westbury, L. I., this new concept of all-season comfort sold 56 homes priced from \$20,000 to \$24,000 on opening weekend! In Texas, New Jersey, Ohio—everywhere—it's creating tremendous interest among house-hunters. Women like the attractive Air-Wall Register which allows complete freedom in arranging furniture and draperies. Builders like the way this pre-engineered system can be adapted to fit any home at low cost. For heating dealers, it's an exciting new passport to more builder business...and leadership!

### A G-E LEADERSHIP FRANCHISE PUTS YOU AHEAD

- In Products: Unique Air-Wall System; packaged home cooling; quick-comfort, fuel-thrifty gas and oil furnaces; outstanding quality at a fair price.
- In Consumer Preference: Surveys prove the General Electric name enjoys tremendous public acceptance.
- In Advertising: Powerful national advertising aimed at consumers and builders, timely action-packed sales programs.
- In Organization: Experienced engineering, sales, and service assistance, and continuous up-to-date training programs.

A G-E Leadership Franchise is a lasting business asset. Write us today—there may be an opening in your area.

\*Reg. trademark of General Electric Co.

GENERAL  ELECTRIC

General Electric Company, Section AA-25,  
Air Conditioning Division, Bloomfield, New Jersey  
Please tell me more about my business opportunities  
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NAME \_\_\_\_\_

COMPANY \_\_\_\_\_

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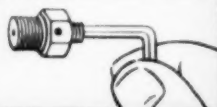
ZONE \_\_\_\_\_

STATE \_\_\_\_\_

## Easier to install and service!!

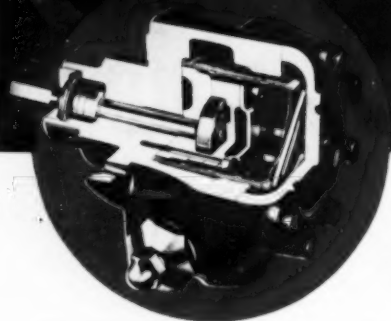
Inlet line ports  
on either side

Air bleed plug  
for simplified start... on  
single pipe installations



Nozzle line port

Return line port...  
easy to connect



**Sundstrand Fuel Units designed to  
save time and work for servicemen**

**OTHER MODEL "J" FEATURES**  
Improved single-stage pump, with  
or without solenoid. Available in  
exact capacities, exact mounting  
arrangements for all new equip-  
ment or replacement installations.  
Has all engineering refinements  
Sundstrand has pioneered over  
the past decades.

INDIVIDUALLY TESTED AND  
**CERTIFIED**

• You can't go wrong by specifying Sundstrand Fuel Units for *all* replacements. In addition to unmatched performance *inside*... Sundstrand units are designed for easier handling *outside*. All ports are conveniently located out in the open where connections can be made easily and quickly with a minimum of piping. Plenty of room around each port to swing a wrench. And, for extra con-

venience, on single pipe installations, at initial start or on a start-up after tank has run dry, an air bleed plug can be supplied for insertion in the gauge port. A couple of turns with an Allen wrench bleeds all air out of the unit without fuss or muss, eliminating air lock or churning (bleeder plug available at slight extra cost). Write, wire, or phone for latest data and prices on Sundstrand Model "J"!



**SUNDSTRAND  
FUEL UNITS**

SUNDSTRAND MACHINE TOOL CO.  
HYDRAULIC DIVISION, ROCKFORD, ILL.

Made in Canada by  
John Inglis, Ltd., 14 Strachan Ave., Toronto

**This BULLETIN**  
**may improve your**  
**Profit Picture . . .**  
*and it's yours*  
*for the asking*

**HOW TO**  
**REDUCE COSTS**  
on  
**Blower and**  
**Motor Assemblies**  
with the  
**flexible**  
**MORRISON PLAN**



*Write today for Bulletin—*  
**HOW TO REDUCE COSTS**  
**ON BLOWER-MOTOR**  
**ASSEMBLIES.**

In many cases manufacturers have reduced their cost substantially by engineering and assembling their own blower units with parts furnished by MORRISON. They have done this in lag time *with no increase in overhead or capital investment.*

Thus, many have been able to keep 50% of their blower dollar in their own plant.

**MORRISON PRODUCTS, Inc.**

**16816 Waterloo Road**



**CLEVELAND 10, OHIO**

# NOW



**individual room temperature control is practical**



**New Low  
Suggested  
List Price**

**\$12<sup>00</sup>  
Each**

**with DOLE automatic register**

Now you can control room temperature individually in your forced warm air heating installations with the new Dole Automatic Register.

This remarkable unit is equipped with a built-in thermostatic control that constantly samples room air and automatically adjusts the damper to let in just the right amount of warm air to maintain the desired temperature. It's completely self contained . . . no bulbs to locate . . . no wiring required. This device really balances the heating system.

Just turn the dial to the desired temperature. The Dole Automatic Register adjusts itself all day and all night . . . is equally effective with continuous or intermittent blower operation.

It's a unit your customers will really thank you for. It makes living more comfortable and saves on heating fuel, too. And it's a fine profit item for you! Write for our Bulletin which contains all the details.

**Control with Dole**

# DOLE

**THE DOLE VALVE COMPANY**  
1-23 Carroll Ave., Chicago 12, Ill.  
Representatives in Principal Cities



# Only Coleman makes

## Blend-Air

**REVOLUTIONARY HEATING AND  
VENTILATING SYSTEM**

**OIL GAS LP-GAS**

### WIDE HEAT RANGE

Gas furnaces from 75,000 to 100,000  
BTU input. Oil from 58,000 to  
97,000 BTU output.

### PACKAGED COMPLETE

Made only by Coleman, delivered all  
complete—ready for installation.

Send for information on this system that revolu-  
tionizes heating installation, brings the cost low.

Backed by nation-wide Coleman advertising.  
The Coleman Company, Inc., Wichita 1, Kansas.

**"IF IT ISN'T COLEMAN, IT ISN'T BLEND-AIR"**

Comfort costs so little with

**Coleman**

# Blend-Air

**AMERICA'S LEADER IN HOME HEATING**

ACA APPROVED OR LISTED WITH UNDERWRITERS' LABORATORIES

See our catalog  
in Sweet's File  
for Builders

#### THE COLEMAN COMPANY, INC.

Dept. AA-753-1, Wichita 1, Kansas

Please send information on Coleman Blend-Air

☐ OIL ☐ GAS ☐ LP-GAS

Name \_\_\_\_\_

Street \_\_\_\_\_

City \_\_\_\_\_

State \_\_\_\_\_

No matter how big or small your home, there's a Coleman to heat it better

### 1-2-3 OF BLEND-AIR

This easy-to-install system has  
(1) Magic Blender in each room, equipped  
with new Coleman Thermostat Air  
Control; (2) revolutionary 3½-inch  
Heat Tubes and (3) compact  
Blend-Air furnace.



**GIVES LOW-COST  
UNIFORM HOME COMFORT**

*The Automatic Comfort Your Customers  
Want — Helps You Sell Homes*

### LOW COST

Factory-engineered, factory-made  
to speed installation and  
keep cost down.

### MIRACLE COMFORT

With the new Coleman Thermostat  
Air Control, you can adjust warmth for each  
individual room and maintain constant,  
even comfort at the desired temperature.

### FAST-SELLING

Economy and Coleman reputation give  
quick buyer appeal and acceptance.

# This POWERHOUSE SALES CAMPAIGN

helps you capture more space heating dollars!



**Big PROFIT-MAKER dealer kit . . .  
plus heavy national advertising . . .**

**SELLS AUTOMATIC HEAT . . .  
GETS AUTOMATIC SALES**

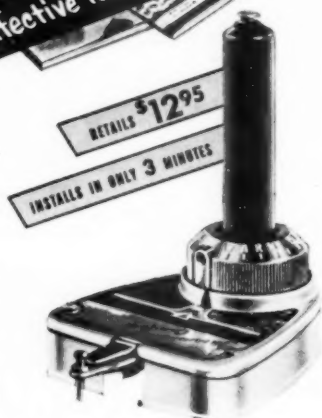
Here's everything you need to help you sell A-P's new automatic heat control. A big, *free* kit of powerful sales-making tools that brings in traffic . . . builds profits. What's more, it helps clinch big-ticket sales of famous-brand space heaters.

Spot the display kit at key traffic points. Use the mailers, newspaper ads, radio and TV spot announcements and point-of-sale pieces to identify your store as headquarters for space heater comfort. Take advantage of the barrage of reader impressions in big national magazines. There's a big selling season ahead. Get your share of sales and profits. For complete details, ask your distributor or write

**A-P CONTROLS CORPORATION**

(formerly Automatic Products Company)

2452 N. 32nd Street, Milwaukee 45, Wis. • In Canada: A-P Controls Corporation Ltd., Cooksville, Ont.



The new A-P Comfort Control provides all the luxury of automatic, dial-controlled heat. Eliminates wiring and thermostats.



## UNIT BEARING MOTOR

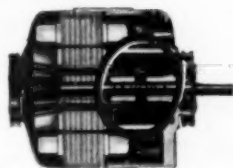
# With this G-E Motor, Fans Can Operate in any Position—Oil Stays Sealed in!

Whatever your fan mounting position—up, down or at an angle—you can count on dependable operation from this motor. And no oil need ever be added! Because the oil is sealed in. The unit-bearing, force-fed lubrication system continuously circulates the oil between shaft and bearing... regardless of motor position.

Where noise level must be low, resilient mounting is available for

quiet operation. With suitable control, motor can be operated at two or three speeds.

A wide choice of ratings is available for many fan sizes. Call your nearest G-E Apparatus Sales Office soon. For further information, write for bulletin GEA-5338. Sect. 700-117 General Electric Company, Schenectady 5, N. Y.



No maintenance needed; oil is sealed in.

GENERAL  ELECTRIC

700-117

### *Small in Size and Price—*

Here's Utility's new baby that makes tough installations easy—the new *Horizontal* 65,000 BTU and 90,000 BTU Forced Air Furnaces. They're small in size and their flexibility will make them popular with dealers and customers alike. They will fit in most attics or, in many cases, under the house. They are ideal for both new and replacement sales. Utility's Horizontal Forced Air Furnaces don't take up precious floor space...are easy to install...and highly competitive in price. And your net will be greater because there's less ducting, less installation expense.

### *Giants in Performance!*

Utility Horizontal Forced Air Furnaces give large home heating at small home cost, plus years of economical, dependable service. And these models are easiest to sell because of these many superior sales points: Super-quiet Dy-Bekt® Drive Blower...automatic controls...even heat distribution to all parts of the house...semi-compensating air delivery...blower can be used independent of heating unit for home ventilation in hot weather...trouble-free operation. And they save you money because they require fewer costly service call-backs!

\*Registered

THIS BABY WILL  
MAKE YOUR HEATING  
PROFITS GROW!

SEE THE COMPLETE UTILITY LINE AT YOUR DEALERS



Blowers



Air Coolers



Automatic Gas Ranges

UTILITY APPLIANCE CORP.

4851 S. Alameda St., Los Angeles 58, Calif.

A-1152

Please send me FREE information about Utility's new horizontal forced air furnaces and the complete Utility Heating line.

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_

Zone \_\_\_\_\_

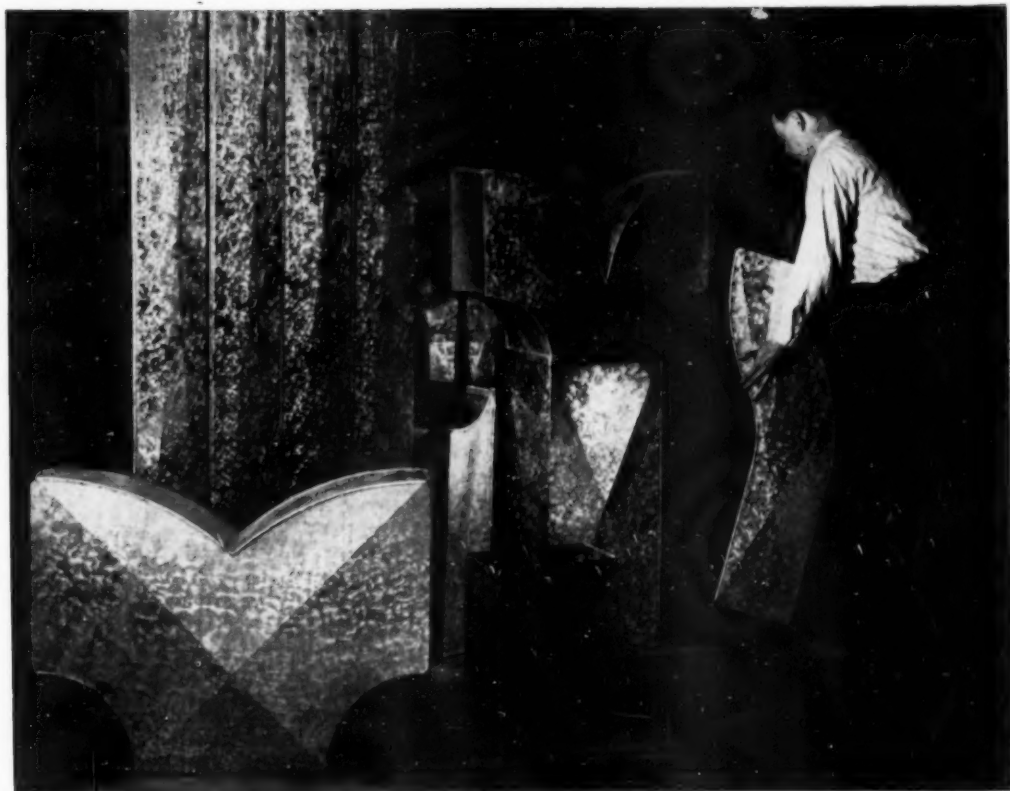
State \_\_\_\_\_

**Deliveries  
NOW!**

**UTILITY**  
TRADE MARK



**UTILITY APPLIANCE CORP.** 4851 SOUTH ALAMEDA STREET  
LOS ANGELES 58, CALIFORNIA  
MANUFACTURERS OF AIR COOLERS, BLOWERS, GAFFERS & SATTLER AND OCCIDENTAL AUTOMATIC GAS RANGES



# The **GOOD-LOOKING SHEET** *is Galvanized Steel*

Appearance packs a punch when it comes to selling a sheet metal job. Your customer has had experience with many different galvanized-steel products and he knows that things made of this material will keep their good looks.

Bethlehem Galvanized Sheets are uniformly coated with Prime Western zinc to protect them against corrosion and to give them the bright, sparkling appearance that customers like. Beneath this coating is a base of strong, durable steel, either plain or copper-bearing.

Besides their good appearance, Bethlehem Galvanized Sheets are easy to handle and to work. They can be handled without denting or kinking; they can be cut, formed and soldered without difficulty. They help you turn out better jobs, in shorter time at higher profits.

**BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.**

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation  
Export Distributor: Bethlehem Steel Export Corporation

**Bethlehem**  
***GALVANIZED***  
**Steel Sheets**





TOP QUALITY

EASY FIT

BETTER INSTALLATIONS

CONVENIENCE

**OHIO VALLEY**  
FURNACE FITTINGS

**THE WAY TO  
BETTER  
INSTALLATIONS**

All Ohio Valley Furnace Fittings are made from prime-quality, full-gauge, galvanized steel—especially selected from the best mill production for quality furnace fittings. They're easy to install, fit well quickly, and enable you to make a better installation in less time. Handy cartons, clearly marked as to quantity, size, and type of fittings inside, make Ohio Valley Furnace Fittings even more convenient. For the best value on your next job—make sure you use Ohio Valley.

DO IT BETTER FASTER — WITH OHIO VALLEY  
Carried in Stock by Leading Wholesalers



Ohio Valley Hardware & Roofing Company  
METAL MANUFACTURING DIVISION, EVANSVILLE, IND.

#### Association Activities —

(From page 109)

has film covering the trip which he will show to members. While visiting the "old home town" in Belgium, the group met Mayor Van Dorpe, and invited him to visit the United States. He did this a short time later. The mayor looked over the Van Assche shop, and was especially impressed with the electric adding machine.

The Macomb County (Mich.) Heating Association recently held an outing which included a cruise through the St. Clair flats, and a dinner at one of the river houses.

The association reports that Detroit and some of the surrounding communities have been working for a number of years on what is termed a "Reciprocal Licensing Ordinance." This is a system whereby two or more communities having substantially the same contractor qualification requirements agree that they will accept each others licensees without any other necessary prequalifying requirements except a nominal registration fee. Such agreements have been operative in the electrical industry since 1939.

#### Copper Roofing Stressed at Erie Meeting

THE SHEET METAL and Roofing Contractors' Assn. of Erie, Pa., saw a motion picture, *Copper Roofing*, at its recent meeting. Mr. Stoner and Mr. Vogeli, American Brass Co., presented the movie, and Mr. Vogeli afterwards discussed various aspects of copper construction.

#### Kalamazoo Association Meets

THE OCTOBER monthly meeting of the Kalamazoo Sheet Metal, Roofing, Heating & Air Conditioning Contractors' Association was held as usual at Chicken Charlie's. C. A. Pearson, U. S. Register Co., talked on perimeter and small pipe heating. He covered the type 1 register furnace, and continued by describing the gravity floor register pipe system, conventional forced air trunk line systems, perimeter, and present 4 in. pipe systems with floor diffusers and baseboard grilles for 1 in. systems. Everett Kromdyk, connected with the same company, gave a "chalk talk" in cartoons. Officers for 1953 were nominated at the short business meeting after the talk. They are to be elected and installed this month.

The association has voted to sponsor an indoor comfort conference in 1953. Glen W. Rynbrand will be the chairman, assisted by John DeHaan.

#### Large Attendance at Warm Air Golf Tourney

OVER 50 MEMBERS and guests of the Chicago Warm Air Golf Association turned out recently for the association's third and final tournament of the season, which was held at the Ruth Lake Country Club, near Hinsdale, Ill.

All of the niblick swingers enjoyed a beautiful day, a sporty course and an excellent steak dinner. A few, such as Mel Jackson, of Grant Wilson, Inc., president of the

(Please turn to page 136)

## An Exhaustive and Clear Explanation of Manual No. 7 That Shows You—



The author of "HOW, WHAT and WHY"—Professor S. Konzo of the University of Illinois—is one of the nation's foremost authorities on every phase of residential air conditioning and warm air heating. It was in Professor Konzo's office that the brunt of the work of assembling data and making the calculations for Manual No. 7 was carried out, and he was, therefore, ideally qualified to prepare this explanation of the Manual's background, make-up and correct use.

### Table of Contents

- The New Manual Simplifies Engineering
- How to Figure Heat Losses
- Furnace Selection and Rating
- Blower Selection and Blower Ratings
- Successful Blower Operation
- Registers—Locations, Types, Sizes
- Procedure for Making Plant Layouts
- Equivalent Length of Fittings
- Equivalent Length of Registers
- Sizing the Branch Ducts
- How Tables 8 and 9 Were Established
- Sizing Return Air Ducts
- Trunk Duct and Bonnet Construction
- Sizing of Trunk Ducts
- How to Adjust and Balance a Warm Air Winter Air Conditioning System
- Reference List
- Cross Index

- HOW to Use It Correctly
- WHAT Experience Is Behind It
- WHY Every Dealer Should Use It

## "The HOW, WHAT and WHY of the

### Code and Manual for the Design and Installation of Warm Air Winter Air Conditioning Systems"

by S. KONZO

Special Research Professor—Engineering Experiment Station, University of Illinois

75 Pages — 8 1/2" x 11" — \$1.00

Users of Manual No. 7 will find this "HOW, WHAT and WHY" booklet invaluable toward acquiring a clearer understanding of the Manual and properly applying it in the planning and installation of warm air winter air conditioning systems. Published originally as a series of articles in the magazine AMERICAN ARTISAN, this clear and comprehensive analysis has proved so helpful to dealers everywhere that now, in response to a wide demand, it has been reproduced in full in this new 75-page booklet "HOW, WHAT and WHY."

Professor Konzo begins "HOW, WHAT and WHY" by telling why a standard designing procedure for warm air winter air conditioning systems was needed by the industry. He reveals how the country's leading manufacturers of warm air heating equipment got together to work out such a method . . . how nearly 200 of the industry's key engineers held scores of meetings over a long period to coordinate data and experience in working out the dependable, simplified design and installation procedure which Manual No. 7 now offers.

Following this introduction, "HOW, WHAT and WHY" goes into a detailed explanation of the designing procedure itself, section by section. It shows the research and experience behind every rule, recommendation, and table the Manual contains. It tells why such factors as temperature drop in ducts, c.f.m. air delivery, air changes per hour, and various other factors which were once considered vital in the planning of forced air heating systems no longer need concern the designer. It provides much interesting supplementary information and comment which helps make each step in the suggested procedure easy to follow and assures the user of the Manual's complete soundness.

An especially useful feature of this explanatory booklet is a Cross Index which permits finding quickly full information about any item in the Manual which is not wholly clear. All in all, this "HOW, WHAT and WHY" booklet will not only assist owners of the Manual to use it to the fullest possible extent, but it will, in the bargain, add materially to their knowledge of every phase of winter air conditioning.

### ORDER BLANK

#### AMERICAN ARTISAN

6 No. Michigan Ave., Chicago 2, Ill.

Attached is my remittance of \$1.00  
for which please send me one copy  
of "HOW, WHAT and WHY."

Individual \_\_\_\_\_

Firm \_\_\_\_\_

Street Address \_\_\_\_\_

City and State \_\_\_\_\_

# SAVE

MORE THAN EVER... NEW

**Ramset** **JOBMASTER**

and **Tru-Set Fasteners**  
for steel and concrete fastening

★ star values bring new ease,  
speed, utility and economy

SEE the new RAMSET JOBMASTER that fastens in split seconds into steel or concrete. Check the big, 10-Star Values for faster, easier, better fastening than ever before. One-Place Tool and Trigger Action for quick, simple loading and firing. Self-contained Barrel Extension, always ready when needed. Gas Diverter to stop spalling. Visi-Chek Button and Manual Safety Control for positive protection. Exclusive Roto-Set Safety Shield for pinpoint positioning. All these add up to the greatest work-saving, time-saving, money-saving advantages in the industry.

#### Always Use Tru-Set Fasteners

When you add these JOBMASTER values to the advantages of Tru-Set Fasteners, with the exclusive Red-Tip Pilot that guides them straight to the work, you've got an unbeatable combination for ease, speed, utility and economy. With 54 sizes and types, there's a Tru-Set Fastener for almost any job. Ask your RAMSET Dealer today for Fastener Specification Booklet, and demonstration of how this RAMSET team can cut fastening costs and get work finished faster. Remember, RAMSET SYSTEM is the pioneer in powder-actuated fastenings—with more enthusiastic, satisfied users than any other tool.



**Ramset Fasteners, Inc.**

Division of Olin Industries, Inc.  
12117 BEREA ROAD • CLEVELAND 11, OHIO



#### Association Activities —

(From page 134)

group, turned in fine scores. Howard Maccubbin, of Steinen Mfg. Co., had the lowest net score for the three tournaments held this year and won the association's season cup. Prize winners for the day were:

##### Low Gross

Mel Jackson, Grant Wilson, Inc.  
Rod A. Olson, Barney Olson, Inc.  
Michael Pomich, G. W. Bekkemer Co.  
Herb Venske, Jr., Chicago Furnace Supply Co.  
Walter Ashliman, Condensation Engineering Corp.  
J. L. Miller, Crosstown Heating Co.  
Gunnar Olsenius, U. S. Steel Co.  
Charley Bennett, Armstrong Heating Supply Co.  
D. S. Seavey, Benjamin Wolff and Co.  
Ken Jensen, Kirk & Blum Mfg. Co.  
D. E. Chalmers, Mahls & Chalmers  
Bob Curran, Servaire, Inc.

##### High Gross Blind Bogey

##### Low Net

Howard Maccubbin, Steinen Mfg. Co.  
I. A. Anderson, Anderson Heating Co.  
Frank N. Schroeder, Aire-Flow Heating Co.  
Frank Klein, Jones Sheet Metal Co.  
Ed Campbell, Wolverine Tube Div.  
Duk Weinberg, A. O. Smith Corp.  
Arthur McLain, Jones Sheet Metal Co.  
George Anderson, Condensation Engineering Corp.  
Clarence Munier, Jones Sheet Metal Co.  
Larry Ingham, Aire-Flow Heating Co.  
Harry Humelblau, Humelblau Associates, Inc.  
Bert V. Teeters, Condensation Engineering Corp.  
Wayne Lambert, Condensation Engineering Corp.  
George Zintel, Zintel, Byfield & Co.  
J. F. Butler, Air Products Equipment Co.  
George Bunt, Jones Sheet Metal Co.  
H. E. Duest, Lennox Furnace Co.  
J. F. Hoffmann, Zintel, Byfield & Co.  
T. S. Jones, Condensation Engineering Corp.  
H. A. Zehn, H. A. Zehn Co.  
M. B. Wallin, Zintel, Byfield & Co.  
Lars Schuler, L. F. Schuler Co.  
Will Pennington, Dole Valve Co.  
T. A. Johansen, Central West Machinery Co.

A non-golfer's prize was won by Lou Reining, Chicago manufacturers' representative, and Messrs. Lyon and Wilcox, both guests, also won golf prizes.

#### Detroit Association Attends Game

MEMBERS of the Detroit Warm Air Heating Association attended the Michigan-Minnesota football game on Saturday, October 25, at Ann Arbor.

At the association's last meeting, the speaker (and refreshments) were provided by the Aire-Flo Supply Co. The meeting, held in the Cass Room of the Fort Shelby Hotel, was preceded by a board of directors meeting which was attended by representatives of several other associations.

The association's annual golf party was held at the Hillcrest Golf Club, Mt. Clemens.

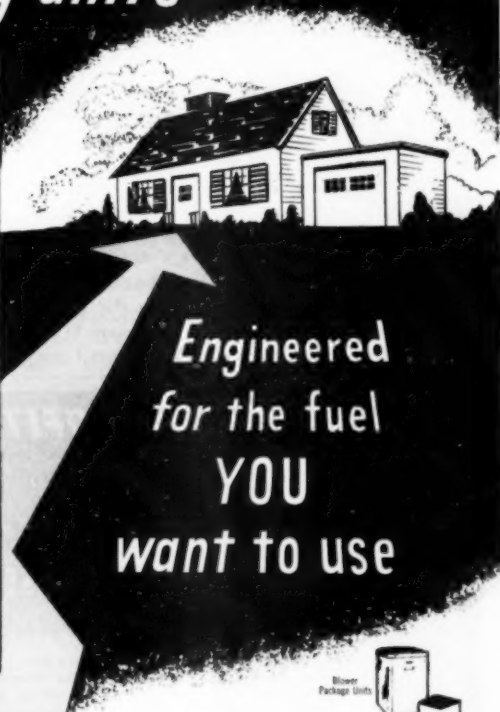
In its membership mailings, the group has included an inquiry as to what kind of program suits the membership best. Members are asked whether or not they like the present programs with manufacturers demonstrating their wares and new products. Space is left for members to check off preferences as to possible subjects for discussion. Among the subjects listed are overhead, labor and job costs, selling, finance, trade outlook, Bu's, cfm's, service and installation schools, etc.

Also included in the mailings is a form, made up by the association, for the use of members who wish to be notified as to when their jobs are approved by the Inspection Department.

# INTERNATIONAL *Economy*<sup>®</sup> *warm air heating units*



Engineered  
for the fuel  
**YOU**  
want to use



Gas Fired Unit Heaters

Gas Gravity Units

Gas Hi boys

Gas Counterflow

Gas Consoles

Oil Counterflow

Oil Gravity Units

Oil Hi boys

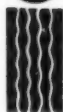
Coal Fired Cast Iron Forced Air Units

Coal Fired Steel Forced Air Units

Blower Package Units

One Pipe Heaters

Cast Iron (Blue Front) and Steel Gravity Units



110 years of heating experience at your service . . .

**International heater co., utica 2, n.y.**

Western Office and Warehouse —  
1933 Wentworth Ave., Chicago 16, Illinois

## Equipment Developments —

(From page 113)

### Space Heater

OIL-BURNING space heater (Model H801), a 38,000 maximum Btu heater with self-vaporizing burner — Perfection Stove Co., Cleveland. It features a removable top grille for rapid circulation of heat and easy cleaning, a lighting tube, an automatic draft regulator, and an oil control valve. With accessories, it may be made automatic. The unit is 33 $\frac{1}{4}$  in. high. AA 24

### Humidifier for Counterflow Furnaces

VAPORITE HUMIDIFIER (Model CF 500) for counterflow style furnaces, which requires no pan and can be installed rapidly — Automatic Humidifier Co., Cedar Falls, Ia. It uses the bottom of the plenum chamber in the concrete

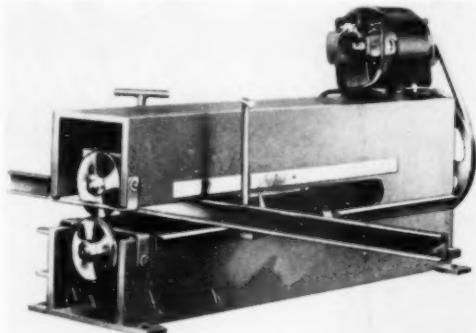


floor slab as an evaporating surface. The temperature controlled drip feed is designed to keep the surface sufficiently moist for quick transfer of moisture to the heated air. Yet, because there is positive shutoff con-

trolled by the temperature, the plenum chamber never gets overloaded with water, the company states. This means that when the furnace is not in use, the plenum chamber is dry. AA 25

### Shears

HIGH SPEED, portable metal slitting shears in two new models — Wilder Mfg. Co., Carmel, Calif. One model (shown) cuts corrugated iron both lengthwise and crosswise (up to 18 gage) at 100 fpm. By the addition of



two units, it is converted into a flat sheet shear for use in siding, roofing, etc. The second model is a heavy duty machine which, according to the manufacturer, cuts through 10 gage metal easily at 72 fpm. It also is designed for multiple cuts on lighter gages. AA 26

## IT'S EASY AND PROFITABLE...

### with CRISE ZONETROL UNITS



The Crise Zonetrol is the first self-contained, fully operable unit to be offered for zone control in forced warm air and air conditioning systems.

It incorporates two distinct advantages that save your customers money, make money for you.

- (1) The Crise Zonetrol includes a line voltage motor with a secondary built-in low voltage control circuit. This eliminates the need for an extra transformer.
- (2) Each Zonetrol is complete in itself and any reasonable number of these units (two or more) can be used to control as many zones as may be desired. No master zone control motor is required.

These exclusive features mean lower cost, both in units and in installation. They add up to less selling resistance and consequently more zone control jobs for you.

Get full facts now on Crise Zonetrol Units. Cash in on the demand for zone control systems by being the first to offer these better, inexpensive units. Write for bulletin.

CRISE CONTROLS DIVISION  
ACRO MANUFACTURING COMPANY  
COLUMBUS 16, OHIO

HEAT WHERE  
NEEDED, WHEN  
NEEDED, AT  
LOWEST POSSIBLE  
COST!

IN NURSERY



INVALID'S ROOM



EXPOSED ROOMS



MULTIPLE DWELLINGS







## At your age!

If you are over 21 (or under 101) it's none too soon for you to follow the example of our hero, Ed Parmalee, and face the life-saving facts about cancer as presented in our new film "Man Alive!". You'll learn, too, that cancer is not unlike serious engine trouble—it usually gives you a warning:

(1) any sore that does not heal (2) a lump or thickening, in the breast or elsewhere (3) unusual bleeding or discharge (4) any change in a wart or mole (5) persistent indigestion or difficulty in swallowing (6) persistent hoarseness or cough (7) any change in normal bowel habits.

While these may not *always* mean cancer, any one of them should mean a visit to your doctor.

Most cancers are curable but *only* if treated in time!

You and Ed will also learn that until science finds a cure for *all* cancers your best "insurance" is a thorough health examination every year, no matter how well you may feel—twice a year if you are a man over 45 or a woman over 35.

For information on where you can see this film, call us or write to "Cancer" in care of your local Post Office.

**American Cancer Society**



MAN ALIVE! is the story of Ed Parmalee, whose fear weakens his judgment. He uses denial, sarcasm and anger in a delightful fashion to avoid having his car properly serviced and to avoid going to a doctor to have a symptom checked that may mean cancer. He finally learns what a difference it makes (in his peace of mind and in his disposition) to know how he can best guard himself and his family against death from cancer.

## NEW LITERATURE

Coupon on page 111

### Warm Air System

THE RADIANT Base Heat forced warm air heating system, combining features of radiant, perimeter, and forced warm air heating, is covered in a new folder — York-Shipley, Inc., York, Pa. The system employs standard size air distributor units installed along outside walls, and a distributor unit connected to the small size round warm air ducts by a standard type boot connector. The duct system is made up of small round pipe with 90 and 45 deg elbows, and makeup air is handled through round ducts. The components of the system are illustrated and there are drawings of typical installations. AA 101

### Duct Insulation

REVISED BROCHURE covers Ultralite duct insulation — Gustin-Bacon Mfg. Co., Kansas City, Mo. A section in the bulletin illustrates the use of an outward-clinch staple tacker used to apply the insulation. Covered are the insulation's thermal and acoustical qualities, and it discusses applications and installation, giving details on what densities and thicknesses to use under various conditions. Accessory materials also are treated. AA 102

### Barometric Draft Controls

BAROMETRIC DRAFT CONTROLS for oil and coal fired residential and commercial heating equipment and gas fired commercial installations are covered in a new catalog — Field Control Div., Mendota, Ill. It offers a complete description on each control, giving sizes, dimensions and shipping weights. AA 103

### Terne Metal

FOLDER DESCRIBES seamless terne metal for roofs and weathersealing — Follansbee Steel Corp., Pittsburgh. The metal consists of copper-bearing steel base plate, hot dip-coated with an alloy of tin and lead. Ease of application, light weight qualities, protection against electrolytic action, and other features are discussed. AA 104

### Gas Heaters

GENERAL CATALOG GN-52 (20 pages), completely revised, includes new designs and data on a line of gas heaters — Reznor Mfg. Co., Mercer, Pa. Units covered include suspended heaters (propeller and blower types), unit type room heaters, central heaters, and duct furnaces. Special features, construction, and full dimensions and specifications are given. AA 105

### Welding

A NEW 32 page booklet discusses welding with stainless steel electrodes — Lincoln Electric Co., Cleveland. It

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... SATISFIED, INSTALL A**

**FUEL  
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**FOR PROTECTION OF FUEL OILS AND BURNER  
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- Easy cartridge replacements each season.
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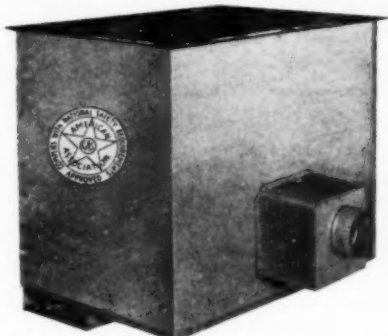


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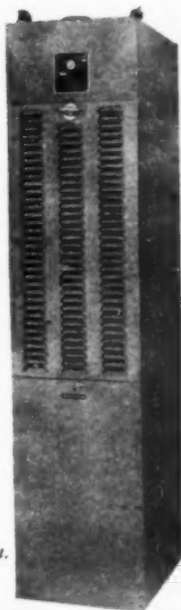
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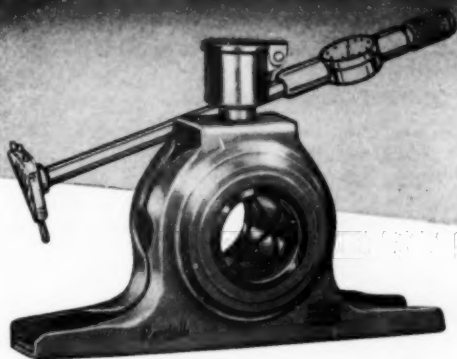
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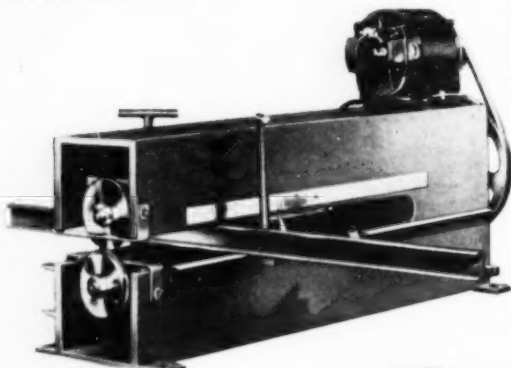
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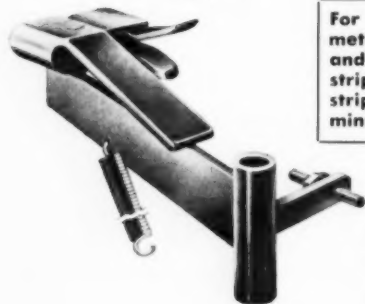
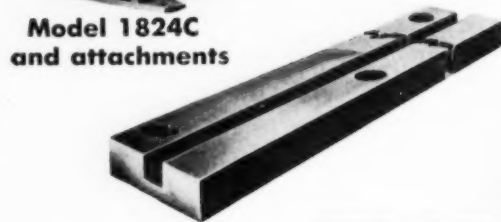
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covers welding of chromium-nickel steels, with and without molybdenum; and welding of straight chromium steels; together with complete procedures and analyses of most of the types.

This booklet is priced at 25 cents postpaid. Please request it direct from the company at 22801 St. Clair Ave., Cleveland 17.

AA 106

## Furnace Pipe and Fittings

CATALOG COVERS a full line of furnace pipe and fittings — Buckeye Furnace Pipe Co., Columbus, Ohio. It describes a forced air system and trunk design for 10 per cent reduction method, 4 in. system fittings, and new round pipe, elbows and angles. Fully illustrated are rectangular and round branch connections, collars, wall stack fittings, floor and baseboard register boxes, plenum chambers, draft diverters, and other equipment.

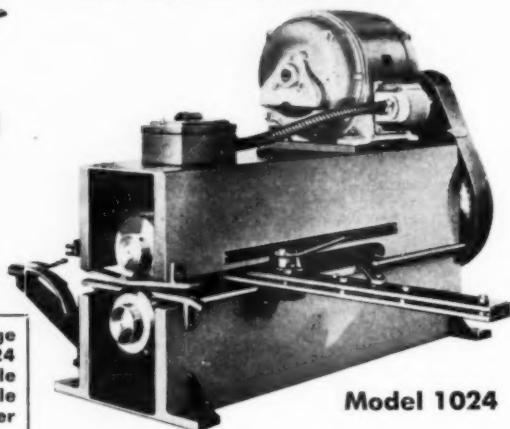
AA 107

## Cutting and Forming Stainless Steels

WALL CHART describes how to use standard shop equipment in cutting and forming stainless steel sheets — Armco Steel Corp., Middletown, Ohio. It describes and illustrates such practices as pasting paper on the finished side for protection, checking the shear blade for nicks, watching shear capacity, using hand snips, cleaning off the forming rolls, etc.

AA 108

The Rugged New Model 1024  
Slices through 10 gage metal  
like butter—on lighter gages  
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Model 1024

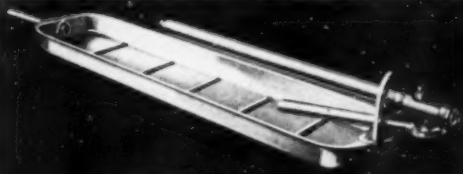
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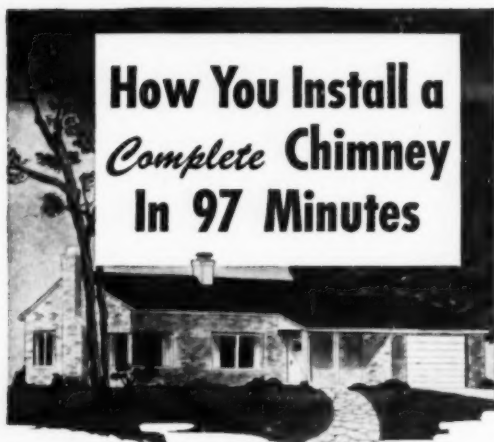
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A complete Van-Packer Chimney can be installed by one man and a helper in 97 minutes. Here's how: 1. Nail chimney support in place. 2. Set each Van-Packer section and cement with prepared acid-proof cement furnished. 3. Nail flashing to roof, slide housing over sections, and cement rain cap in place. It's as easy to build as that.



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Coupon on page 111

### Unit or Central Heater

A NEW FOLDER describes a completely enclosed unit designed to serve all conventional, perimeter, and special forced air heating requirements, which is AGA approved as a unit heater for use with or without ducts, and as a central heating appliance to be used with ducts — Reznor Mfg. Co., Mercer, Pa. Typical installations and construction features are illustrated, and complete dimensions and specifications are given. AA 109

### Draft Aid Units

ILLUSTRATED FOLDER describes a device for demonstrating draft aid units which are designed to stop smoking, soot-ing, wet chimneys and pulsating — Quickdraft Co., Canton, Ohio. The unit consists of an electric blower that introduces air into the chimney at the correct velocity to maintain proper draft over the fire and assures a positive discharge of combustion gases up the flue, the manufacturer states. AA 110

### Furnace Pipe

SPEED-LOK furnace pipe, which can be assembled by hand, is described in a new folder — Superior Metal Fabricating Co., Niles, Ohio. Approximate weight and list price charts are given for the pipe, for various elbows, and for adjustable angles. For assembly, the tongue on one edge is inserted into the fold on the other until they snap together. AA 111

### Steel

GALVANITE (a zinc coated weather resisting paint holding steel), and type 430 stainless steel are covered in two new bulletins — Sharon Steel Corp., Sharon, Pa. Fabrication processes and special applications are described and illustrated. AA 112

### Exhaust Fans

HEAVY DUTY belt-driven propeller type exhaust units are covered in Catalog F-52 — M & E Mfg. Co., Indianapolis. They are designed for removal of hazardous fumes and vapors or for general ventilation in industry. Selection, construction and application information is included on the complete line (available in a size range of from 12 to 48 in., delivering 900 to 33,000 cfm). Also described are window mounted units, duct mounted exhaust units, roof ventilators, automatic shutters, and exhaust piping. AA 113

### Cutters

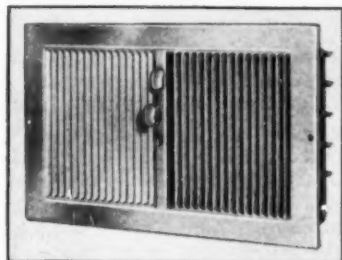
SNIPS, A PIPE and slot cutter, an asbestos and slate cutter, a crimper and cleater, and a twist pliers are pictured and described in a new folder — Karl Klenk, Inc., Wilmington, Del. The sheet metal pipe cutters are designed for use in closed types of structures, such as large diameter heating ducts. The crimper-cleater has a snap lock feature. AA 114



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## REGISTERS and GRILLES

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With these registers you are assured of perfect control of the air stream—both vertical and horizontal.

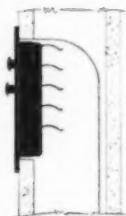
Adjustable vertical fins control the air stream on the horizontal plane.

Air Flow Valve controls the vertical direction of the air. Valve can be pre-set so that it will always open at the correct up or down deflection.

The Push Button operator opens or closes the register with a touch of the finger.

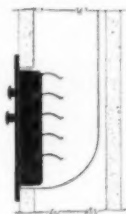
Air Control Dual Control Registers come in a complete range of sizes to fit your every installation need.

Assure yourself and your customers of the most satisfactory operation of your installation by using Air Control Dual Control Registers.



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The Air Flow Valve functions perfectly in any type of stack-head, either square or round.



OVERHEAD SYSTEMS

When duct comes down from attic install register in regular position—register does not have to be turned upside down.

### THE AIR FLOW VALVE

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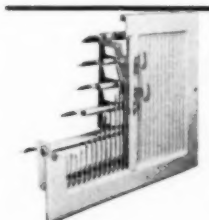
The valve extends far enough into the duct to assure uniform air distribution over the entire face.

When closed, louvers overlap and seal at two points. This helps prevent whistle and noise.

Curved form of the louvers aid air movement through the register and helps keep resistance down.

Linkage bar is in the center of the valve thus providing equal pressure on each end of the louvers.

Stop below push button can be set for any desired air deflection.



Write now for your copy of the New Air Control 52-ec Catalog

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simple  
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Also available from your P-K Distributor . . . the popular leakproof, rattle-proof "DIAL" Regulator, and for heavy duty, the "UNXLD" Quadrant. Remember . . . IF IT'S P-K . . . IT'S O.K.

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### Humidification

VARIOUS MODELS of industrial humidifiers, humidity indicating instruments, and home office humidifiers are presented in the bulletin, *A Few Facts About Humidification* — Ableon Supply Co., Jamaica, N.Y. Also treated are the problems associated with low humidities and the meaning of relative humidity. AA 115

### Arc Welders

FOLDER PRESENTS a complete line of gasoline engine driven arc welders — Hobart Brothers Co., Troy, Ohio. Full electrical and mechanical specifications are given for the welders and for a combination model arc welder and power unit. AA 116

### Snips for Sheet Metal, etc.

COUNTER CARD for display purposes features snips for cutting sheet metal, wire screening, gasket material, etc. — Crescent Tool Co., Jamestown, N.Y. The snip is illustrated and its uses are listed. An easel back holds the card upright. AA 117

### Warm Air Ducts

FOLDER COVERS Transite warm air ducts for perimeter heating systems — Johns-Manville, New York. These

asbestos-cement ducts, available in 10 and 13 ft lengths, are described as easy to handle and readily workable. Illustrations show typical installations, steps in application, and a selection of the fittings. AA 118

### Welding and Soldering of Steel

WELDING AND SOLDERING operations on stainless steel are shown by photographs and descriptions in a new two color wall chart — Armco Steel Corp., Middletown, Ohio. It covers such practices as jiggling to weld, oxyacetylene welding, metal arc welding, spot welding, etc., and a sequence of photographs shows correct soldering practice. Also included is a welding reference table. AA 119

### Baseboard Heating System

A SIMPLIFIED SYSTEM of baseboard warm air heating is illustrated and described in Catalog 51652 — Gerwin Industries, Michigan City, Ind.

Units are available in three sizes — 8, 5 and 3 ft — and are accurately rated for static pressures and air temperatures encountered in the new small pipe distribution systems. The units may be painted as desired and can be used in homes with or without basements. They can be installed in any stage of construction, can be plastered in or set against the finished walls. This equipment is suitable for cooling as well as heating and is equally adaptable for old or new construction, according to the manufacturer. AA 120

## NOW! AFTER YEARS OF RESEARCH AND DEVELOPMENT

### DESIGNED FOR HIGHER HEATING EFFICIENCY AND LOWER FUEL BILLS

## New Siemon Power-Flame



power-type GAS Conversion Burner brings to the industry an entirely new principle of burning gas...efficiently and economically.

A wide range of sizes from 85,000 to 3,000,000 input!

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For Gas Burners, for Combination Gas-Oil Burners, see Siemon the complete line of burners for every heating need.

Write Department 18 for information.

**Siemon Mfg. Co., 1819 Holmes St., Kansas City, Mo.**

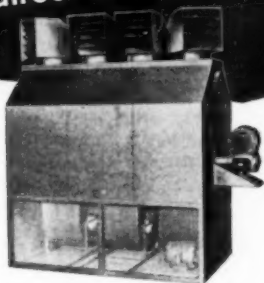


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- Controls are burner mounted and pre-wired.
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direct-fired **HEATER**

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**heavy and light oil fired series**

Listed by Underwriters' Laboratories, Inc.

**NATIONAL CHAMPION direct-fired HEAVY AND LIGHT OIL SERIES HEATERS** have met the rigid standards set by Underwriters' Laboratories, Inc.—assurance of safe unit operation!

Twenty-four basic units in the heavy and light oil fired series offer heat capacities from 200,000 to 2,000,000 BTU's!

**NATIONAL HEATERS FEATURE teardrop design stainless steel firebox.**

Designed by National Heater engineers to ensure lower air flow resistance—allows a constant, uniform flow of clean air over the heating unit. Easy to wipe—ensuring better and faster heat distribution!

**Heater Construction**

Units are of welded one-piece steel construction. Design utilizes to advantage the direct flame-metal-air principle of heat transfer for maximum efficiency.

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Light and heavy oil burners, designed for Nos. 1, 2, 4 and 5 fuels, are pressure gun type. These units are also Listed by Underwriters' Laboratories, Inc. All burners are equipped with patented air adjustment for stable flame and quiet operation with short draft tube to reduce overall unit length. *Electronic flame failure control—standard equipment!*

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### CHASE® THRU-WALL FLASHING and Cap Flashing Receiver

This new full-weight copper thru-wall flashing bonds in ALL directions. What's more, the integral cap flashing receiver permits easy installation of cap flashing *after* the base flashing and roof are installed. No plugs or wedges are needed to keep the receiver open.

The cap flashing need not be bent after it is inserted and locked in the receiver. This means that *cold rolled* copper can be used for the cap flashing resulting in a neater, more watertight installation at reasonable cost.

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Coupon on page 111

#### Eight-Station Power Unit

THE ROTO-TABLE CO., Dayton, Ohio, has issued a circular explaining how a single motor can power eight machines.

The rotary power table consists of an octagonal table top, 42 in. across, mounted on a tripod. A 1/2 or 1/3 hp motor is connected to a gear box by V belt.

The unit will power any bench machine in the shop that is designed for hand cranking, thus freeing the operator's cranking arm and giving him an extra hand to work with. It mounts eight tools in a space 5 ft by 5 ft. Hex adapters are fitted in place of hand cranks and the extension shaft coupling attached to the adapter of the machine in position. Machines can be changed simply by releasing locking lever, uncoupling shaft and turning table to bring required machine in position. AA 121

#### Register and Grille Catalog

ILLUSTRATIONS AND TABLES OF SIZES, weights and prices of a complete line of grilles, cold air faces, registers and ceiling outlets are contained in a 36-page catalog issued by the Independent Register Co., Cleveland. It is the manufacturer's 52nd annual catalog and provides complete information regarding dimensions, open areas, etc., of a wide variety of registers and grilles.

Four pages of selection tables provide statistical information on throw, velocity and pressure at various angles. AA 122

#### Gas Heating Institute Moves

THE INSTITUTE of Gas Heating Industries, Inc., has taken new office facilities at 603 Citizens National Bank Bldg., 453 S. Spring St., Los Angeles 13. The decision to move into downtown Los Angeles was based on the growth of the institute in members and its increased activities, requiring a closer relationship with city, county, state, governmental, and other associations.

Speaker at the institute's October meeting was C. W. Nessel, authority on warm air heating and heating controls, associated with Minneapolis-Honeywell Regulator Co. He talked on present trends in warm air heating and on perimeter heating for all homes and small structures. He discussed the findings of the field investigation committee of the National Warm Air Heating and Air Conditioning Association which investigated the performance of warm air heating equipment installed in domestic applications during the past three years. The meeting was held at the Caroline Pines Restaurant, Los Angeles.

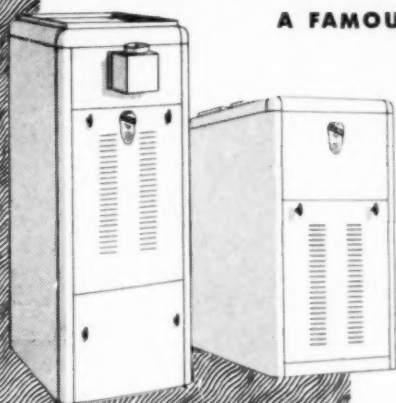
The organization's September meeting was held at the same place, with 127 members and guests present. Richard Greyson, engineer, Donald Warren Co., moderated a panel of experts including: Arthur Horn, Mal Lowe, Leo Hungerford, Carl Artran, Carl Kriwanek, and Don Bentley. He introduced the subject of unit heaters in a talk, after which the panel discussed many questions.



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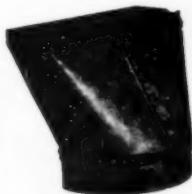
**Counter-flow Models**—Just released. Newest design and engineering. Complete line includes gas, oil, and coal models in 25 styles.

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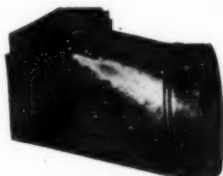
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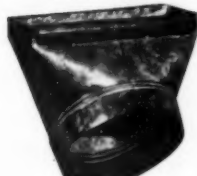
No. 112 BOOT



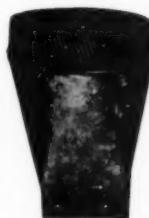
No. 110 BOOT



No. 113 BOOT



No. 111 BOOT



← No. 164 End of Line Center Takeoff. For use with 2 No. 163.

No. 160 Takeoff Round Pipe to carry branch in or below joist. →



## GRAY "Snap-Rite"

FURNACE PIPE AND FITTINGS  
AIR CONDITIONING PIPE  
AND FITTINGS

A complete line of Gravity and Forced Air Pipe and Fittings with our positive "SNAP-RITE" Lock for quick assembly and erection. Wall Stack and Fittings in 3 1/4" standard depths. Trunk Pipe and Fittings in 8" standard depths.

Write for Catalog

**GRAY METAL PRODUCTS, INC.**

30 Carlton Street  
Rochester 7, New York

## we hear that...

PEERLESS MFG. CORP. has purchased a two-story building immediately adjacent to the main building. This adds 75,000 sq ft of floor space, 30,000 sq ft of yard area, and 20,000 sq ft of parking area to the company's facilities. There is a railroad spur track which permits loading of three cars simultaneously.

WESTINGHOUSE ELECTRIC CORP. will expand its manufacturing operations in the Boston area soon with a \$1,250,000 building project at its Sturtevant Div. plant in Hyde Park. Total employment in the division will reach approximately 2200 when the new facilities are fully manned.

THE NEW Skokie, Ill., plant of General Controls Co. was officially opened recently at a buffet luncheon attended by more than 200 people, including U. S. Congresswoman Margaret Church of Illinois, State Senator Helen Marsh, George D. Wilson, president of the village of Skokie, and others. William A. Ray, president of the company, welcomed the guests in a speech stressing that the 20th century has seen notable growth in the building of automatic controls for home and industry. He emphasized the importance of research and product development as key company policies.

The new plant, built at a cost of \$750,000, and comprising 60,000 sq ft of factory, warehouse, and office space, will be managed by Fred E. Weldon, sales manager of the company.



TWO HUNDRED GUESTS attended the opening of the new General Controls plant in Skokie, Ill. Among them were (left to right) Hugh Courteel, guest; J. F. Ray, vice president in charge of sales; Fred E. Weldon, sales manager; and J. F. Chambliss, guest

ACTIVE OWNERSHIP of the Mission Appliance Corp., Los Angeles, has been taken over by Utility Appliance Corp. While no change in the management of the com-

# DIRT & DUST



## Airson

# CLEAN AIR

### BUY the DIFFERENCE

### ... at No Extra Cost

Only Airson offers you ALL these Filtering features —

- Galvanized steel frames
- Bronze welded corners
- Drain slots for quick, easy cleaning
- Expanded metal face plates act as lint arrestors

Airson Air Filters are viscous type, permanent and cleanable. Write for free bulletins.

"AIRSAN" is Reg. U. S. Pat. Off.

### Air Filter Corporation

108 A NORTH WATER ST. • MILWAUKEE, WIS.

Canadian Representative

DOUGLAS ENGINEERING CO., LTD., MONTREAL

A Few Distributorships Available. Write for Details.



The Central Maintenance Building, Division of Highways, State of California, was only recently constructed... using Alcoa Aluminum Building Sheet exclusively for roofing and siding. Contractor-Erector: Geo. D. Widman, Inc.

## THE STATE ARCHITECTS SPECIFIED **ALCOA** BUILDING SHEET



Big, tough, easy-to-handle units of Alcoa Industrial Building Sheet helped speed the construction of this highway maintenance building. With the installation of the last fastener, the job was complete... ready for occupancy. Typical of the low-cost, low-upkeep buildings made possible by aluminum.

Light weight Alcoa Industrial Building Sheet (only 56 pounds per square) reduces dead load. Goes up faster, requires no finishing... no painting.

Compare the advantages offered by aluminum with those of any other material. Next time you figure a building job, figure it in aluminum... Alcoa Aluminum Building Sheet.

### FACTS FOR ENGINEERS

Alcoa Industrial Building Sheet may be erected over steel or wood; and there is a fastener for every type of job.

**Lengths:** 5 to 12 feet.

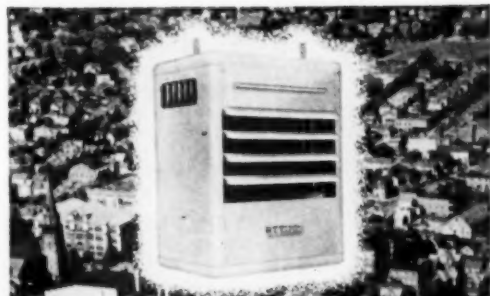
**Widths:** Roofing, 35 inches—Siding, 33 1/4 inches (32-inch coverage).

**Thickness:** .032 inches—equal to 22 U. S. Gauge.

For complete engineering and application details, write for booklet AD-167.

**ALUMINUM COMPANY OF AMERICA**  
807-L Gulf Building • Pittsburgh 19, Pa.

**ALCOA**  
ALUMINUM  
**INDUSTRIAL BUILDING SHEET**



## this is your market!!! **REZNOR** AUTOMATIC GAS UNIT HEATERS FOR PRACTICALLY EVERY BUILDING

Nearly every building, commercial, industrial and public, has some use for a complete, packaged heating unit... many use a complete heating system of Reznor units. There's always a warehouse, garage, room or wing that is beyond the capacity of the heating system to provide adequate comfort.

They will eventually supply auxiliary heating. Make it your business to enjoy the plus profit by answering heating problems with Reznor units.

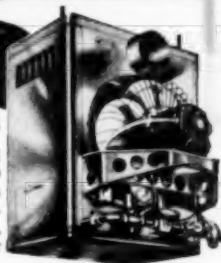
With Reznor units you are not a stranger. A 120 million ad impression per year program keeps Reznor the best known name in unit heating. You should be listed among the Reznor Dealers who sold more of these units than any similar make. The market is big and Reznor is right for your market.

USED WITH NATURAL, MANUFACTURED AND LP GASES

### **REZNOR** WORLD'S LARGEST-SELLING GAS UNIT HEATER

#### MECHANIZED HEATING

A completely automatic, packaged unit in sizes from 25,000 to 200,000 BTU. Installed singly or in multiples as required. High efficiency due to balanced engineering of heat production, air movement and controls. Both floor and suspended models available.



SEE SWEET'S CATALOG FILE

**REZNOR MANUFACTURING CO.**  
40 UNION ST. • MERCER, PENNA.  
Send me 30-page catalog in full color

Name \_\_\_\_\_  
Firm \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_

## *we hear that...*

pany is contemplated, the board of directors was changed to include four officers of Utility. Forced air central heating systems and unit heaters will be among the products manufactured at Mission.

SURFACE COMBUSTION CORP. has moved its Detroit office to 10333 West McNichols Rd., Detroit. The firm has maintained offices in Detroit for over 25 years.

THE SHEET METAL WORKERS AFL UNION, Local No. 34, of Minneapolis, has provided a full supporting scholarship in the air conditioning and sheet metal department of Dunwoody Industrial Institute, Minneapolis. The scholarship will cover full tuition for a year's course at the school.

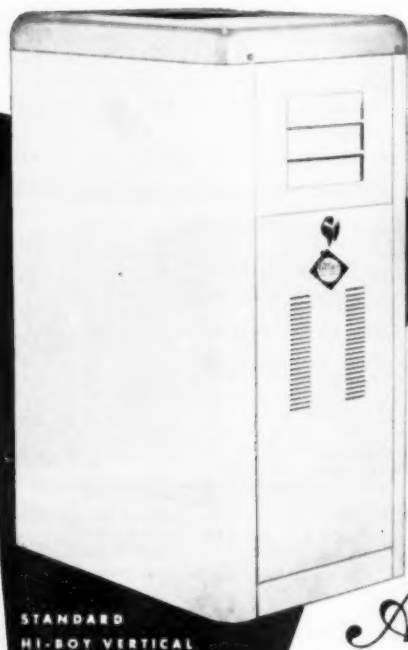
THE ALLEN MARTIN SUPPLY CORP. has been opened at 1051 South Clinton St., Syracuse. It will specialize in the wholesaling of warm air heaters and supplies for all types of installations. Mr. Martin has been associated with Richardson & Bovuton Co., Morrison Steel Products, Inc., Packard Motor Car Co., Campbell Heating Co. and Chicago Steel Furnace Co. Allen F. Martin Jr., will be associated with Mr. Martin in the firm.

THE TODD CO., Rochester, N. Y., is now providing free design service for air conditioning and heating firms seeking to improve the advertising effectiveness and eye appeal of the checks they use. The company manufactures bank and commercial checks.

CORY CORP. has acquired, by long term lease, an additional manufacturing plant in Grayslake, Ill. It comprises 52,000 sq ft on 14½ acres of land. The company will enter the volume manufacture and sale of electric room air conditioners and dehumidifiers for home, industrial and commercial use, and the new plant facilities will be devoted to these products.

BECAUSE OF increased consumer demand, Quiet-Heat Mfg. Corp. plans to expand production considerably for 1953. While no exact figures have been announced, the company indicated that expansion would be considerably greater than in 1952.

THE MEYER FURNACE CO. introduced its Marvellaire MV small duct system during a recent sales meeting of Weir-Meyer furnace territorial representatives. The system employs the perimeter heating principle of blanketing as much of the outside walls and windows as possible with warm air.



**ADD**

*Glamour*

to your  
**BOILERS AND FURNACES**  
with  
**ATTRACTIVE,  
DISTINCTIVE**

*Atlas* **STEEL CABINETS**

Attractive, tailor-made Atlas Cabinets have stream-lined rounded corners, modern hardware and are beautifully finished in oven-baked hammer-loid in colors of your choice. There are no bolts or screws and it fits together smoothly and quickly, producing savings in installation costs.

Atlas Cabinets are built to your specifications. They will carry your name and trademark and not that of Atlas. We can produce a full range of all models.

Send Your Specifications for Free Cost Estimates to

*Atlas* **MANUFACTURING CO.**  
EUSTIS AT ROBBINS ST • ST. PAUL 4, MINN.

DON'T THROW ME AWAY!  
I'M GOOD FOR MANY MORE  
YEARS IF YOU FIRE ME  
WITH A



**NEW SUN-RAY**  
SERIES "VS"  
**VERTICAL FLAME  
BURNER**



**The New  
Addition to the  
Great Sun-Ray  
"Shell" Head  
Burner Family**

- 1 — Burns less oil — 500° to 600° F. hotter flame.
- 2 — No combustion chamber required.
- 3 — No complicated hearth to build.
- 4 — No moving parts in combustion area.
- 5 — Burns catalytic oil cleanly and completely.
- 6 — Delivers heat directly to boiler sections or furnace heat exchangers.
- 7 — Built-in delayed action oil brake
- 8 — Easy to install — requires less service.
- 9 — Tops in consumer appeal.

Famous the World  
Over for Quality  
and Economy



**SUN-RAY BURNER MFG. CORP.**

139-34 Queens Boulevard • Jamaica 2, N.Y.

# HANDY

Furnace Pipe  
and Fittings  
Are All Their  
Name Supplies.

They are **HANDY**  
to handle —  
**HANDY** to as-  
semble —  
**HANDY** at cut-  
ting costs and  
making profits.

Made for Gravity,  
Forced Air, Peri-  
meter and Small  
Pipe installations,  
with 86-year-old  
experience built  
into every piece by  
F. Meyer + Bro Co.  
Peoria, Illinois.  
"The Handy Pipe People"

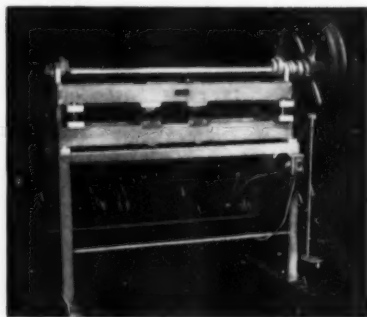


**Do it the easy way  
with a Fallsington Husky.**



Put your shop on a production line basis and save dollars with a Fallsington Husky Press.

Pictured below is the Husky Press. A **MUST** for the aggressive sheet metal shop.



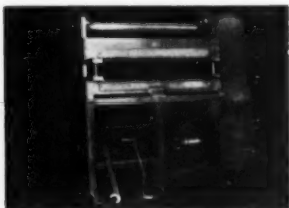
The Husky Press is of a straight-forward all welded design with no fancy fixtures or dead weight in castings.

The Husky Press will stamp accurate blanks of any shape representing 65 lineal inches in sheet metal 24 gauge or less at a high rate of speed.

For heavier work investigate our **New** Fallsington Multi Die Press — pictured below.

The Multi Die Press is ideal for short runs with Dies made of Kirksite or any other soft material dies.

**Write for demonstration, our sales Representative will call with demonstrator.**



**FALLSINGTON MANUFACTURING CO.**

**FALLSINGTON, PA.**

**Manufacturers**

**SHEET METAL MACHINERY & TOOLS**

*we hear that...*

PLANS for stepping up the industrial construction service of Luria Engineering Co. were discussed recently at the company's semi-annual convention. A program for accelerating production of the company's standardized steel buildings was presented.

THE MINNEAPOLIS-HONEYWELL REGULATOR Co. has established a new factory in Amsterdam, Holland, to manufacture heating controls abroad for the first time in the company's history. The factory will produce a limited line of automatic controls for oil-fired furnaces.

THE NOMA ELECTRIC CORP. and Radio Corp. of America have jointly announced that RCA has acquired The Estate Stove Co. of Hamilton, Ohio, which produces gas and oil space heaters under the trademark, "Heatrola."

A GROUP of more than 250 southern California heating dealers attended the 1952 regional sales conference of the Payne Furnace Div., Affiliated Gas Equipment, Inc., at the Ambassador Hotel, Los Angeles.



THE LARGE REPRESENTATION at the Payne Furnace Div. meeting filled the Embassy Room at the Ambassador Hotel

CARRIER CORP., Syracuse, N. Y., plans greatly expanded production of residential air conditioning equipment in 1953, reflecting this summer's unprecedented consumer demand for such products.

To meet the swiftly growing demand for air conditioning in homes, the company is currently moving into a new plant of approximately 400,000 sq ft which will be devoted primarily to the manufacture of residential air conditioning and other unitary equipment. Looking further into the future, the company has arranged for the purchase of another 400,000 sq ft of plant space from Syracuse University for manufacturing, research, warehousing and office use.

A new expanded office for the company is being built in Charlotte, N. C., to handle demand for air conditioning in the Carolinas. It is located at 2610 South Blvd. and houses the direct and dealer sales office plus a pipe fabricating shop.

The largest single order ever written by the company for room air conditioning units has been signed by Carleton-Stuart, Inc., distributor in New York City.



## SIMPLIFY YOUR SALES, INVENTORIES AND SERVICE ...

*Standardize WITH*  
**Janitrol**  
AUTOMATIC HEATING EQUIPMENT

Handling several makes of heating equipment multiplies your sales and merchandising problems ... makes servicing and stock more expensive.

It will pay you to find out how to streamline your operations with the complete Janitrol line for lower overhead, increased profits.

Two of the most consistent profit producers in the complete Janitrol line



### GAS FLOOR FURNACES

Three models, 30, 50 and 65,000 Btu/hr. input capacities, designed and built for enduring service. Rust and heat resistant baked porcelain finish, inside and outside assures longest possible life. Here is genuine Janitrol quality in small complete heating packages.

Write today for information on the complete Janitrol line ... learn why "Janitrol is Easier to Sell, than Sell Against."

**SURFACE COMBUSTION CORPORATION, Toledo, O.**

Gas and Oil-Fired Conditioners and Boilers. Gas Gravity and Floor Furnaces. Gas Burners and Unit Heaters. Save-Way Air Systems.



### GAS GRAVITY UNITS

You and your customers can depend on faster, more constant heat, because of Janitrol's exclusive scientific design. Three models are housed in smart rectangular blue castings with control cover available as optional equipment. Designed for easy installation.

# Speed up Assembly!

## Switch to BLACK & DECKER POWER!



**BLACK & DECKER HOLGUN®** drills holes to  $\frac{1}{4}$ " diam. in steel, to  $\frac{1}{2}$ " diam. in hardwood. Perfectly balanced, light in weight, compact, easy to handle, accurate. Famous "Pistol Grip and Trigger Switch."



**BLACK & DECKER SCRUGUN®** drives machine screws and nuts and self-tapping screws to  $\frac{1}{4}$ " wood screws to #12 x 2". Positive or adjustable clutch available. Same design features as B&D Holgun!

**SEE YOUR NEARBY B&D DISTRIBUTOR** for demonstrations and full details on this famous team of assembly tools. They'll help your men turn out more work, with less fatigue and less spoilage. And you have nearly 50 other B&D Drill and Screw Driver models to choose from to fit your needs on heavier work! Write for free catalog to: **THE BLACK & DECKER MFG. Co., 641 Pennsylvania Ave., Towson 4, Md.**

\*Trade Mark Reg. U. S. Pat. Off.



SHEARS



SANDERS



BENCH GRINDERS



HAMMERS

LEADING DISTRIBUTORS EVERYWHERE SELL



# Black & Decker

PORTABLE ELECTRIC TOOLS

## we hear that...

The order covers window-sill and console models, and totals more than \$11½ million.

WYSONG AND MILES Co. recently held a month-long open house for dealers throughout the nation to show the company's new ¼ in. series of power squaring shears.



SHOWN INSPECTING a Wysong and Miles Co. shear are (left to right) W. R. Kime, T.H. Johansen, R. L. Beall, Roy Clarkson, R. F. Hall, Jr., Barto Brown, R. L. Butchard and Andy Thompson

THE AIR CONDITIONING Blower Manufacturers' Association is the new name of the Furnace Blower Manufacturers' Association. The name was agreed upon

at a recent meeting of the organization in Cleveland. New officers elected at the meeting were: president, Frank Gibbons, Viking Air Conditioning Corp.; vice president, Walter Curtis, Peerless Electric Co.; secretary-treasurer, Ward Brundage, Brundage Co.; and chairman of publicity, Ben Krause, Air Controls Inc., who has as his associate Thompson Morrison, Morrison Products, Inc.



MEMBERS OF THE Air Conditioning Blower Manufacturers' Association at its recent meeting included (left to right): Ward Brundage, Howard King, Homer F. Brundage, Thompson Morrison, Frank Gibbons, B. G. Krause, Tom Byrd, Walter A. Curtis, and Marion I. Levy

EMPLOYEES OF PENN CONTROLS, INC., at a recent all-plant meeting, were presented with an "Award of Merit"

# AIR YOUR VENTILATION PROBLEMS WITH PENN DYNAFANS

No doubt about it—Penn Dynafans increase employee efficiency in your customer's plants by exhausting the "hot spots." This rugged unit can be depended upon to handle the toughest ventilation problems...

- Motors out of the air stream, safely remove dust, heat, fumes, vapors, etc.
- Economical to install and operate.
- Sizes range from 250 c.f.m. to 30,000 c.f.m.
- Pulling power is positive and units will not overload regardless of resistance.
- Units are quiet running and have a low clean silhouette.

Write for complete literature today.  
Representatives and Distributors in Principal Cities.

**PENN VENTILATOR CO.**  
PHILADELPHIA 40, PENNSYLVANIA

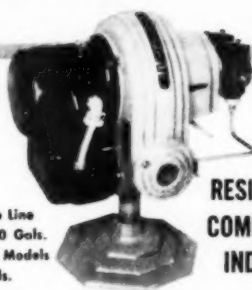
FOR MORE THAN 25 YEARS THE BUILDERS' <sup>ROOF</sup> TOP LINE!



# REACH OUT FOR MORE SALES

WITH

## Radiant



A Complete Line  
from ½—30 Gals.  
Shell Heat Models  
½—10 Gals.

RESIDENTIAL  
COMMERCIAL  
INDUSTRIAL

### Every PROFIT Reason Says—BUY RADIANT!

**Performance**—Equal to the highest priced burners.

**Price** — Meets competition every time . . . plus —

**Low Upkeep** — Factory Guarantee . . . National

**Distribution** . . . Protected Territories . . . Easy

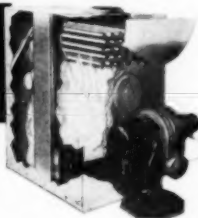
**Installation** . . . Minimum Servicing.

### THE Radiant OIL FIRED WINTER AIR CONDITIONER

Precision Engineered for Economy  
in Price—Installation—Operation

**SUPERIOR DESIGN** — Tubular construction presents greater heating surface to flue gases than conventional furnaces . . . jacket is substantial and well finished . . . high temperature combustion chamber . . . motor driven blower unit and air filters.

**FACTORY ASSEMBLED**—Shipped complete with combustion chamber installed and jacket completely assembled.



Available in  
Four Models:  
Low Boy,  
Suspended Unit,  
Hi Boy,  
Counterflow

WRITE FOR COMPLETE  
RADIANT LITERATURE.

You'll sell—  
and profit more!

RADIANT UTILITIES CORP.

8817 18th Avenue, Brooklyn 14, N. Y.



## Amazing New Improved BETT-MARR

actually outperforms saws  
costing 6 times as much



For faster, smoother, more accurate cutting of galvanized sheet metal, there's nothing better than a Bett-Marr—yet, it actually costs so little, no shop can afford to be without one. The all-cast frame of the new, improved Model 14 MS assures the utmost in stability and accuracy and reduces vibration to a minimum.

**BETT-MARR CUTS 50 to 70 STACKED GALVANIZED SHEETS** — at speeds up to 15 inches per minute. It's an all purpose 14-inch, ball-bearing band saw with blade speeds readily adaptable to cutting metals, plastics, wood, iron and steel castings and forgings.

**SMOOTH, POWERFUL CHAIN DRIVE** — Blade Speeds from 125 FPM to 2200 FPM are quickly adjustable for cutting any material without blade chatter.

**POSITIVE BLADE CONTROL** — Case hardened guides with carbide back-up bearing (adjustable up to ½" blade width) assure cutting accuracy. Flanged wheels control blade for smooth radius cuts and perfect straight line cuts.

**PRECISION-BUILT** — Yet it costs little more than a home-workshop power saw. Its performance equals band saws costing many times more. Life-time sealed precision ball bearings assure long, trouble-free performance. Blades and wheels are fully enclosed for safety.

MODEL 14-MS\*  
Depth of Cut 8½"  
Blade to Frame 13½"  
Table Size 20x22"  
Overall Depth 34"  
Blade Length 97"

\*Includes set of 4 sheet metal clamps and riser bar insert to match for sheet metal work.



GET THE AMAZING FACTS. Learn how you can cut production costs with a Bett-Marr sheet metal saw. It pays for itself quickly in both large and small shops. (Equipment dealers—write for information on available territories.)

MAIL THIS TODAY

BETT-MARR

MFG. CO.

HOPKINS,  
MINNESOTA

☐ Please send me more information on the Bett-Marr sheet metal saw.

☐ Where can I buy a Bett-Marr?

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_

Zone \_\_\_\_\_

State \_\_\_\_\_

**Your Key to '53 . . .**



# COME TO CHICAGO

to see

## NEW Ideas . . . Products . . .

### Methods . . . Trends in

## HEATING VENTILATING

## AIR CONDITIONING

For 5 full days, Chicago's huge International Amphitheatre will be bulging with sales-building ideas and up-to-the-minute information on HEATING, VENTILATING, and AIR CONDITIONING.

More than 300 exhibits will display the latest methods, equipment, and parts developed for installations in all types of homes, buildings, and commercial establishments. Sheet metal contractors, engineers, manufacturers, and dealers, all will have an exceptional opportunity to compare hundreds of new items and to discuss plans, problems and requirements on the spot with the technical experts who will be staffing the exhibits . . . will come away with more practical dollars-and-cents ideas than could possibly be acquired anywhere else in so little time.

## MARK THIS DATE NOW

## JAN. 26-30

**ATTEND and BENEFIT from this 5-day exposition of ideas and progress.**

**11th Air Conditioning Exposition**  
INTERNATIONAL HEATING & VENTILATING EXPOSITION

Auspices American Society of Heating and Ventilating Engineers  
Management International Exposition Company

**we hear that . . .**

plaque received from the National Safety Council for one million man-hours of operation without a lost-time accident.



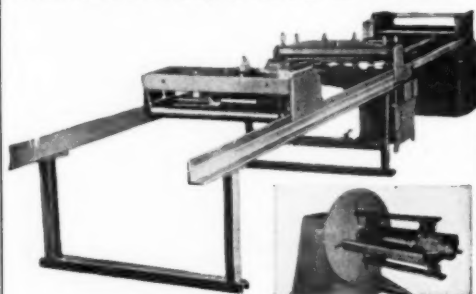
R. S. PENN, vice president of operations, Penn Controls, Inc., and J. P. Bradford, personnel director, hold safety award

EFFECTIVE OCTOBER 1, Skilsaw, Inc., Chicago manufacturer of portable electric and pneumatic tools, changed its name to Skil Corporation.

The change was made because the company felt the old name was limited in its descriptive value.

FORMAL OPENING of three models of the Birchwood-at-Westbury Homes, Westbury, L.I., N.Y., took place

### Modern De-Coiling Equipment by "DAHLSTROM"



Coiled materials are fed, straightened, measured, cut into sheets, and ejected on a continuous basis automatically. Line shown handles to 36" widths in 20 ga. mild steel—coil weights to 6000#. OTHER CAPACITIES AVAILABLE.

Inset shows self centering coil reel which is part of the complete line—Unit has infinitely variable speed drive between 35 and 100 fpm.

**PURCHASE ALL YOUR MATERIALS IN COILED FORM AND ENJOY THE FOLLOWING ADVANTAGES:**

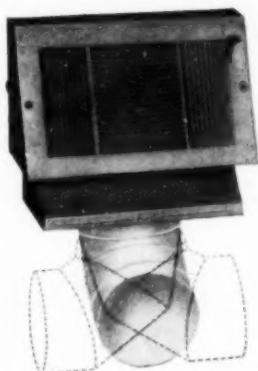
- Lower material inventories
- Less Scrap (sheets can be cut to exact lengths needed)
- Material handling savings
- Tons more storage in the same space

**DAHLSTROM MACHINE WORKS, INC.**

4227 West Belmont Ave.

Chicago 41, Ill.





Sizes  
OUT-O-WALL Special  
10x6 — 4" or 5" pipe size  
12x6 — 6" or 7" pipe size

The No. 43 Perimeter Diffuser for floor or toe-space installation is a good companion in the Rock Island Line.

## OUT-O-WALL

Trade Mark Registered  
United States Patent Office

The New "OUT-O-WALL" Special

### ★ Saves YOU money

No boots needed. Head and boot combined in one piece.

### ★ Saves YOU time

When register is set you're ready to run pipe in any direction.

### ★ More efficient

New three-way grille designed specifically for Perimeter and High Velocity heating installations.

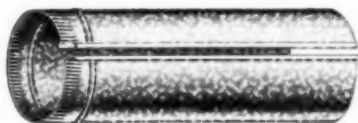
Floor	Diffuser	Size
2 1/4 x 14		
4 x 10		6 x 10
4 x 12		6 x 12
4 x 14		6 x 14



Write for further information. We manufacture a complete line of gravity, floor, and air conditioning registers.

**ROCK ISLAND REGISTER COMPANY**  
Rock Island, Illinois

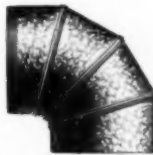
## EXCELSIOR GALVANIZED NESTED ROUND PIPE, ELBOWS, AND ANGLES



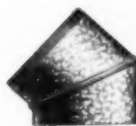
### EXCELSIOR GALVANIZED STANDARD LOCK PIPE

Full bundles contain 50 feet each.  
Pipe furnished in 24-inch joints.

30 gauge - 3" to 12" dia. 26 gauge - 3" to 24" dia.  
26 gauge - 3" to 14" dia. 24 gauge - 5" to 12" dia.



90° Elbow



45° Angle

### EXCELSIOR ADJUSTABLE ELBOWS AND ANGLES

30 gauge - 3" to 12" dia. 30 gauge - 5" to 12" dia.  
26 gauge - 3" to 14" dia. 26 gauge - 5" to 14" dia.  
26 gauge - 5" to 24" dia. 26 gauge - 5" to 24" dia.  
24 gauge - 5" to 12" dia. 24 gauge - 5" to 12" dia.

Write for new 8-A catalog of prices and details on complete line.

## THE EXCELSIOR STEEL FURNACE COMPANY

118 S. CLINTON ST.

Phone: FRanklin 2-8120

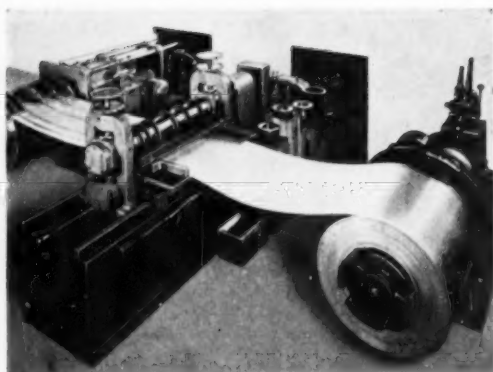
CHICAGO 6, ILL.

EXCELSIOR HEATER & SUPPLY DIV.  
The Excelsior Steel Furnace Company  
879 Hersey Ave., St. Paul 4, Minn.  
Telephone: NEstor 7255

BREX & BIELER DIV.  
The Excelsior Steel Furnace Company  
229 Marion St., Brooklyn 33, N. Y.  
Telephone: GLenmore 2-7881

EXCELSIOR HEATING SUPPLY DIV.  
The Excelsior Steel Furnace Company  
528 Delaware St., Kansas City 6, Mo.  
Telephone: VICTor 3715





**"... we're looking  
for slitting  
business, too!**

Complete equipment for precision slitting and recoiling; also decoiling, roller leveling and cutting to lengths. METALS — 14 gauge or lighter — any width up to 36".

Write us for details . . . prompt attention  
is guaranteed.

**"Made-Rite" Co., Inc.**

Manufacturers & Suppliers  
Furnaces — Pipe and Fittings

10th and Monroe St.

Newport, Kv.

***we hear that . . .***

recently. This development is the largest completely air conditioned project ever attempted.

Sales prices of the homes range from \$19,000 to \$23,500, including an oil burning warm air furnace and a summer cooling unit installed in the basement and connected with the duct work.

Heating and air conditioning were supplied and installed by the United Combustion & Air Conditioning Corp., Bayside, N. Y.

FIELD SALES MANAGERS of White Products Corp., Middleville, Mich., had a two-day sales meeting recently in Grand Rapids, Mich.

Invited by A. D. Vining, vice president and general manager, to "come right out and speak your minds", the sales supervisors discussed everything from competition to design to sales quotas. Net result was a better understanding all around, plus an occasional revision in plans or operations.

IN ORDER TO MORE ACCURATELY describe its present products, the Detroit Lubricator Co. has changed its name to the Detroit Controls Corp.

There will be no change in operating personnel and the company will continue as a division of the American Radiator and Standard Sanitary Corp.

# PEXTO



**No. 514**

## NEW BULLDOG PATTERN SNIPS



- Cam action.
- Powerful, short fulcrum blades.
- Full cut, with normal hand opening.
- Cutting edges electrically heat-treated.
- Combination pattern.
- Length overall 16", 2" cut.



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SOUTHINGTON, CONNECTICUT

SINCE 1785



13PX82

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This practical series covers every angle of oil burner work, including arrangement of shop . . . stocking of parts . . . record-keeping . . . installation procedures . . . the handling of crews . . . how to make heating surveys . . . how to size combustion chamber . . . how to install thermostat . . . how to start the burner . . . how to use testing instruments . . . and how to operate a service department. It contains, as well, a complete list of causes and cures of oil burner troubles that will serve as a reliable guide in making service calls.

Every shop handling oil burner jobs should own this book. Full size, 8½ by 11 inches — 57 pages of practical helps. Send \$1.00 for a copy today to the address below.

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Chicago 2, Ill.

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*Are you interested in securing additional lines?*

We are occasionally asked by our manufacturer advertisers to suggest the names of manufacturers' agents in various sections of the country whom they can contact in regard to representation of their warm air heating, residential air conditioning and sheet metal products.

If you would like your name listed on our records for inquiries we may receive on your territory, we invite you to write us. There is no charge in connection with this service.

## American Artisan

6 N. Michigan Ave.

Chicago 2, Ill.

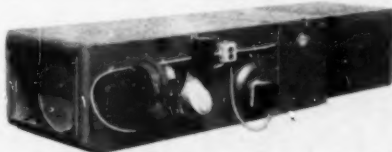
## Horizontal Furnaces Opening New Profit Opportunities

**Heating Contractors Help Builders Beat  
Rising Costs and Make Money Doing It**

Keeping the cost of new homes within the reach of potential buyers is a major problem today. Builders and contractors are meeting it in two ways: First, to beat the high cost of single lots, they are developing large tracts of land and building many homes at the same time. Second, they are eliminating every possible costly feature — basements, garages, even service rooms.

### New Furnace Opens New Field

This is opening up a whole new field of opportunity for the heating and sheet metal contractor—the sale and installation of underfloor central warm air heating systems. The sensational NEW "Besser Junior" makes central heat possible in even the lowest cost homes.



The Besser Horizontal Furnace Needs No Basement or Utility Room —  
Can be Installed Under-Floor or Overhead

Because of the great savings, more and more builders are turning to the new type horizontal, oil-burning furnaces. A central heating system adds value to any house, makes it easier to sell—is far superior to floor furnaces. Now, the NEW "Besser Junior" brings central heat within every price range.

### Here's Where Profits Are Made

Bidding on the big jobs is always competitive, so where do you come in? Here's the answer: to start with, you've got something to sell—the answer to a builder's prayer—a way to put central heat into every house without the cost of a basement or utility room. That's a natural advantage. Now, the cost is lower than ever.

Still, you may have to figure closely, so where's your profit? Right here! Service call-backs are what eat up your profit. When you install a Besser Horizontal, service calls are fewer—far fewer—because only the best goes into a Besser! Properly installed, it's virtually trouble-free. Call-backs will be few and far between. Every Besser is fully guaranteed . . . because it's built to last!



Besser Plant Facilities Expanded 50% to Meet Growing Demand

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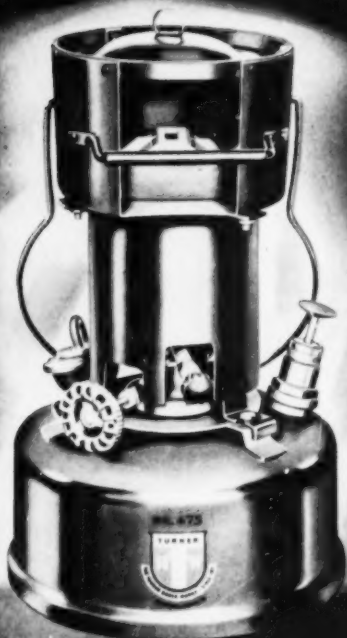
Quiet, automatic Besser Horizontals are equally adaptable to overhead installation on commercial jobs where floor space is at a premium. One furnace gives you a double sales potential. Full range of sizes to meet every job need—delivered to you assembled, ready to install.

### New Territories To Be Opened

Greatly expanded plant facilities make it possible to serve a larger area. Distributor franchises and dealerships in certain areas offer a real opportunity for profit in a product you can sell with confidence. Inquiries from aggressive Manufacturer's Agents invited. For full information write: Besser Metal Products Corp., 754 Clement Ave., P. O. Box 4064, Charlotte, N. C.

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*Quality Since 1871*



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Your  
Jobber

## No. 475 Low Pressure TINNER'S FIRE POT

● Smokeless...sparkless...sootless! Complete with Turner's exclusive "Carburetor Control" for more perfect combustion; also a flame control — for exact heat desired — which automatically cleans the orifice. Construction assembly permits quick, easy accessibility...windshield, top-plate, and bail handle are one unit, and can be lifted from tank by loosening one wing nut. Burner coil is made of extra-heavy seamless steel tubing, protected by sturdy outer jacket that maintains heat without overheating; can be generated and used in heavy wind. Fuel capacity — one gallon; burns for 9 hours on one filling. Get details, too, on Turner's popular Plumber's Fire Pot (No. 275); also Turner's complete line of Blow Torches.

### THE TURNER BRASS WORKS

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Since 1871

## appointments . . .

L. F. REIMANN as assistant vice president of manufacturing at Jackson and Church Co. Associated with the firm for 27 years, he has been superintendent of the two plants in the Saginaw area since April, 1951.



L. F. Reimann



G. H. Rouse

GEORGE H. ROUSE as vice president of Stevens Mfg. Co., Inc. He has been with the firm for two years and prior to this he was a manufacturers' representative on the west coast handling the firm's products. He has also been associated with Samson United in Rochester, and General Electric in Bridgeport, Conn.

RALPH REDMOND, JR., as Duo-Therm district manager for the Motor Wheel Corp., Lansing, Mich. His territory will cover Texas, Oklahoma, and New Mexico, with headquarters in Dallas. Before joining the company, he was



## Steel PRESS BRAKES

Many Standard Sizes  
Latest Designs  
and Features  
for Fast Accurate Work.

Complete line of  
induction hardened  
forming dies for all  
makes of press brakes.



All sizes of CHICAGO press brakes are readily adapted for a wide variety of bending, forming, drawing, notching, blanking, punching, embossing, etc.

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(ASBESTOS-PROTECTED)

The initial cost of DUX-SULATION may seem high—but when you deduct the cost of additional labor and accessories that **MUST** be purchased if you use other materials you'll find DUX-SULATION costs **NO** more. DUX-SULATION comes complete—goes on faster—needs no outer protection and lasts long.

CONDENSATION has always been a costly, destructive "thorn in the side" of all duct systems. DUX-SULATION Stops CONDENSATION 4-ways—Here's How!

1. **MOISTURE RESISTANT OUTER SURFACE.**
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You will quickly see the many more features of Asbestos-Protected DUX-SULATION by sending for our **FREE** Sample Kit No. 408-R or by referring to our Catalog in Sweets File (10a W 1). Write to: **GRANT WILSON, INC., Suite 1560-A, 141 W. Jackson Blvd., Chicago 4, Ill.**

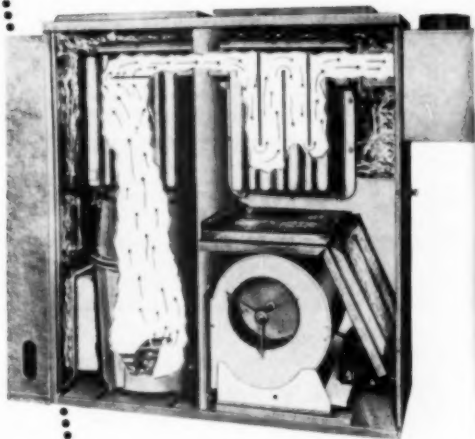
**Grant Wilson inc.**  
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## XXth CENTURY

*Announces*

THE NEW  
"SPACE SAVER" MODEL

## ZEPH-AIR



The new "Space Saver" Zeph-Air helps heating contractors fill a definite need in today's market. You must be able to supply a furnace to fit the smaller utility areas in present day homes. . . yet there can be no compromise with the heating requirements. That's where we shine with our new "Space-Saver" Zeph-Air. . . it occupies only 23 x 44 inches of floor space, yet its efficiency will equal or surpass many larger units. The "Space-Saver" Zeph-Air is manufactured in two models — one will supply 110,000 Btu input, the other 123,000 Btu input depending on your requirements. As usual, all cast iron parts carry the famous XXth Century twenty year warranty against cracking or burning out — and it also applies to defects in workmanship or materials.

We think you'll like this addition to our line and would like to send you more information. Please send us a postcard today for more details.

**XXth CENTURY**  
**HEATING & VENTILATING CO.**  
**96 IRA AVENUE AKRON, OHIO**



No Jet-propelled Air Blasts! with

## HONEYWELL AIR-DIFFUSION REGISTERS



Your customers will never be exposed to disturbing air blasts—drafts and cold spots—if you specify Honeywell air-diffusion warm-air registers on your jobs!

The unique, functional design of the Honeywell register sends a beautifully soft and gentle blanket of air flowing into every corner of the room... in the quantities you desire!

Honeywell registers give your customers 120 degrees angular air diffusion!

For information call the Honeywell office nearest you: or write Honeywell, Dept. AA-11-187, Minneapolis 8, Minn.

- Smart new appearance with streamlined, functional design
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- No streaks on walls; manual shut-off for economy



**Honeywell**



*First in Controls*

## Sequoia's "Close'eer"

the really new  
furnace for 52

Here's the gas furnace that has the building industry buzzing — Sequoia's amazingly shallow "Close'eer". Only 14 inches deep (65,000 B.T.U. model), assuring easiest ever installation in first floor closets or wall alcoves. 61" height for trouble-free basement positioning! The most all-ways-useful winter air conditioner on the market today!

Installers love the "Close'eer"  
Every part positioned right on the face—every connection within easy arm's reach!



Produced in 7 sizes  
65-80-100-120-140-160-200,000 B.T.U.  
Quality built — Competitively priced

TELEPHONE OR WRITE FOR COMPLETE DATA TODAY

**SEQUOIA MANUFACTURING COMPANY**

1000 BRITTAN AVENUE • SAN CARLOS, CALIFORNIA

America's fastest growing furnace manufacturer

## appointments . . .

salesman for the Container Corp. of America. The A & R Distributing Co., Phoenix, as Duo-Therm distributor for the entire state of Arizona. A newly-formed concern, the company is owned and operated by F. C. Anderson and R. N. Ruecker, who formerly was with the A. A. Schneiderhahn Co.

ROBERT P. MARSHALL as superintendent of the Air Conditioning Div. at Servel, Inc. He has been with the company since 1937, for the past two years as assistant to Richard F. Schiewetz, who he now replaces. Mr. Schiewetz has joined the Trane Co. at Scranton, Pa., as plant manager.

ROBERT W. ANDREE as New York sales representative of the Fiber Glass Div., Libbey-Owens-Ford Glass Co., with offices at 570 Lexington Ave. For the last six years, he has been merchandise buyer for J. C. Penney Co., Inc. Richard Harpet has been appointed a sales representative for the company's Boston office, where he will work directly with Hilary F. Smart, district manager for fiber glass sales in the New England area. Prior positions: advertising manager, Mabley & Carew; Wurzburg's at Grand Rapids; and recently has been advertising manager of Lamson Bros. Co. For the company's Philadelphia office, C. Frederick Moore, a mechanical engi-

## Convert Gravity Furnaces With A **CIRCULATAIRE** Bonnet Blower



### **CIRCULATAIRE** ELIMINATES COLD ROOMS, BALANCES HEAT DISTRIBUTION, SAVES FUEL

CIRCULATAIRE solves the problem of "hard to heat" rooms, boosts warm air quickly through all the heating pipes. CIRCULATAIRE is easily and quickly installed without removing the bonnet. Packaged unit includes motor and fan control. No new sheet metal work required, no changing of cold or warm air pipes, no baffles to be built. The CIRCULATAIRE is rigid, quiet and efficient in operation.

**NOW READY** — New CIRCULATAIRE Sales Aids add effectiveness to selling interview, conserves valuable selling time and increases sales.

A COMPLETELY PACKAGED UNIT  
Nothing for the dealer to furnish except limited amount of labor



GET THE FACTS TODAY! WRITE...

**CIRCULATAIRE** DIVISION OF CORLETT-TURNER CO.  
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## Your Jobber Knows ...

- Comparison tests
- prove conclusively

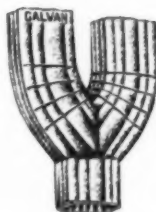
## Galvan products ARE

### EASIER to install

- ... because they are precision made for quick installation

• Ask Your Jobber For

- ... Galvan Elbows, Shoes and Cut-offs



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How to set up a program beneficial to your customer, profitable for you — and good for your industry.

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A complete description of the new principle of mating air and oil patterns for higher efficiency, the knowledge of which will enable you to get the highest possible CO<sub>2</sub>.

### 4. "YOU'VE GOT TO KNOW NOZZLES"

There is a right nozzle for every oil burner. A thought-provoking article which will help you.

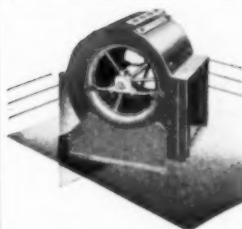
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The proper location and the great importance of accurate draft control is described in this article.

Write for your FREE bulletins NOW

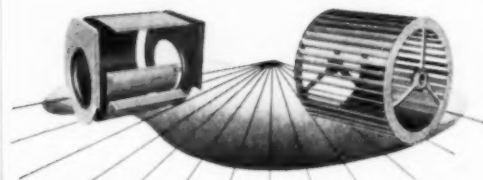
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Oil Heating Supplies Division, Manufacturers, Lynn, Mass.



## MASSACHUSETTS AIR CONDITIONING FURNACE BLOWERS

Designed for manufacturers of warm air furnaces and air conditioning equipment.  
Wheel Sizes 7 1/2" to 27"



Housing sides, cutoff plate and scroll sheet.  
Heavy gauge steel stampings.

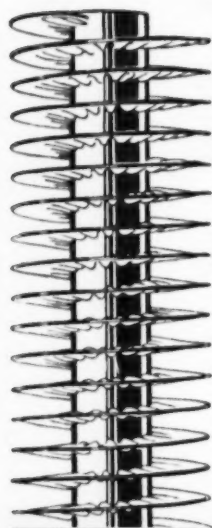
End spider suspension type wheel assembly.

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Manufacturers of centrifugal blowers for 36 years

MASSACHUSETTS BLOWER DIVISION  
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**FIN-TYPE COILS**  
For  
**Fast, Efficient**  
**HEATING**  
and  
**COOLING**

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**AEROFIN**  
**CORPORATION**  
S. Geddes St. Syracuse 4, N.Y.

## appointments . . .

neer, has been appointed field sales representative with headquarters at 1528 Walnut St. Before joining the organization, he worked with Sharp & Dohme, as a junior engineer, and for the last two years he has been with Westinghouse Electric Corp. Originally assigned as sales representative in Kansas City, Arthur S. White has been transferred to Chicago and will have his offices at 120 S. LaSalle St. He was formerly in the engineering department of the Socony-Vacuum Oil Co.

R. C. ROBERTSON as manager of marketing for the home heating and cooling department of General Electric Co. He joined the company in 1951 and formerly was manager of direct sales in the Air Conditioning Div. Previous to that, he was eastern district manager, Superior Valve & Fittings Co.

JOHN HELLSTROM, vice president of American Air Filter Co., as director of sales of all AAF and Herman Nelson Div. products. Formerly he managed the company's Pacific division. Assisting him will be Robert W. Nelson, vice president, formerly of the Herman Nelson Div.

CHESTER F. McLAUGHLIN as sales representative for Eastern Appliance Corp., heating equipment manufacturer.

## DON'T WASTE A MINUTE!

THEY ADD UP TO HOURS! DAYS!

WEEKS!

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Usefully with  
**SMITH'S  
CLEAT BENDERS**

The Complete  
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Bends Cleat Edges  
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Pays for Itself  
Quickly  
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No money tied up in idle equipment . . . And no time wasting adjustments to make, fits any size duct up to width of bender and any thickness up to 20 Gauge.

No. 12 SMITH'S CLEAT BENDER (12" wide). \$42.00\*

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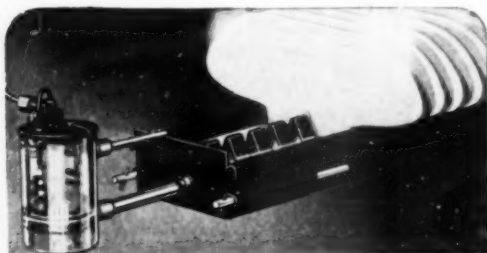
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## The COMPLETE Humidifier Line for Warm Air, Air Conditioning, or Steam

**FLOTROL Humidifiers** — the finest for air conditioning or forced air, with famous Flotrol control.

No. "310" **FLOTROL** — for small furnaces (up to 100,000 BTU). Economical, easy to install, has Flotrol control.

**MICRO-FEED Humidifiers** — low cost, dependable drip-feed unit.

**HUMIDITY CONDITIONER** — self-contained gas-fired unit, ideal for radiator heating systems.

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# MONMOUTH HUMIDIFIERS

## PIPE AND FITTINGS GUARANTEED QUALITY!

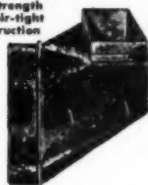
All Ajax fittings are made of high-grade, full gauge sheets . . . no seconds used! Quality is fully guaranteed. Your order, large or small, receives prompt, personal attention.



Scientifically designed to reduce air friction

For help on your heating problems our engineering department is at your service. Contact us . . . we'll gladly work with you.

Double seamed for strength and air-tight construction



Write for catalog of Furnace Fittings.

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Division of  
The Cincinnati Sheet Metal & Roofing Co.  
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1800°F. without forced air blast.

### No. 101 Bench Furnace

The most efficient, powerful and economical bench furnace made for heating soldering coppers up to 12 lbs. per pair. Also used for heat treating, case hardening, and annealing carbon steels. Two burners. Firebox  $3\frac{3}{4} \times 4\frac{1}{2} \times 5\frac{1}{2}$ . Complete with work rest block and baffle plate. \$18.80 F.O.B. factory.



### No. 118 Combination Bench Furnace

For heating largest soldering coppers, stenciling irons, branding irons, etc.; heat treating carbon steels, and soft metal melting. Lid on hood is removable for inserting 22 lb. pot for melting lead, tin, babbitt, etc. Three burners. Firebox  $6\frac{1}{4} \times 5 \times 6\frac{1}{2}$ . Complete with pot. \$35.00 F.O.B. factory.



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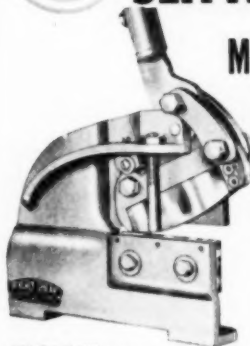
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Cleaner Cuts

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Capacities to  $\frac{3}{16}$ "



55-3  $\frac{1}{2}$ " slitting cap;  
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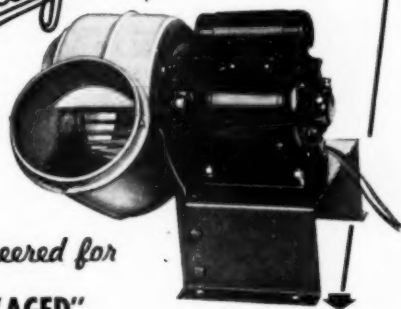
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Engineered for

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WRITE TODAY for the new Bayley Vent Set Bulletin.

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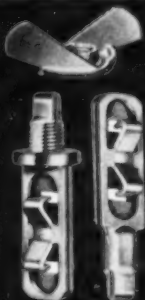
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## E-Z-ONS CLINCHING ACTION for Positive, Quick and Easy Installation

- ★ EZ-ONS two claw-like prongs clench and grip from opposite directions to assure a tight fit.
- ★ One blow permanently rivets — not 3 or 4 operations.
- ★ EZ-ONS will not swivel or loosen.
- ★ EZ-ONS eliminate sheet metal screws, rivets or washers — none to use — none to lose.



STANDARD  
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It comes completely assembled including combustion chamber. For Garages, Service Stations, and Basementless Homes. Made in sizes from 75,000 BTU to 600,000 BTU.

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## appointments . . .

His territory will be the northern part of Massachusetts as well as Maine and New Hampshire.



C. F. McLaughlin

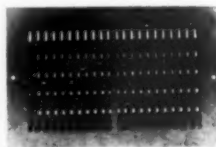


A. H. Bechtel

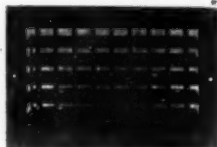
A. H. BECHTEL as assistant sales manager for the Auer Register Co., Cleveland. Prior connections: American Radiator and Standard Sanitary Corp., Minneapolis-Honeywell, and middle eastern sales representative for Ingersoll Products Div., Borg-Warner Corp.

CLIFFORD L. ROWLEY as head of the new Battery and Process Products Div., Owens-Corning Fiberglas Corp., Toledo. He had been manager of the former Air Conditioning and Battery Div.

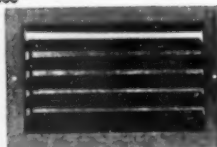
## See Your Jobber



#300



#200



#100

Many thousands of the above types used in housing projects. Lowest in price, more free area.

The Air-O-Vane ceiling diffuser. Also made in type D-R with positive shut-off control (Patents Pending) made in all sizes.



Greatest in free area of any ceiling diffuser and lowest in cost. Write for catalogue or see your jobber.



AIR-O-VANE CEILING DIFFUSER  
WRITE FOR CATALOGUE TO —

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AIR CONDITIONING COMPANY

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## COPPER AGAIN AVAILABLE IN "FITRITE" AND "RIVAL STRAPS"



All styles also made in zinc.  
"Fitrite" 3" lt. made in  
aluminum.  
All zinc straps can be used  
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tion).

**SOLD THROUGH JOBBERS ONLY**

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## "FITRITE" 3-WAY CLAMP

A NEW VISE-GRIP MADE EXCLUSIVELY FOR US



Throat  $3\frac{1}{2}$ " deep  
Jaws  $3\frac{1}{2}$ " x  $\frac{1}{2}$ "  
Designed for BOX  
LOCK of ventila-  
tion duct. Can be  
used as SHEET  
METAL CLAMP and  
as WELDING  
CLAMP.

**PRICE \$3.55**

IT LOCKS TO  
THE WORK

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42 YEARS EXPERIENCE

### WHITNEY-JENSEN

No. 127

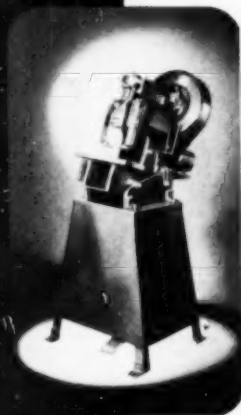
#### Inclinable POWER PUNCH PRESS

Small, powerful inclin-  
able punch press that  
can be tilted to a  
maximum of 25°. Fly-  
wheel at rear permits  
easier feeding of stock,  
also provides greater  
margin of safety. Rated  
at 275 strokes per  
minute, length of stroke  
is 1"; capacity 5 tons.  
Has non-repeat clutch.

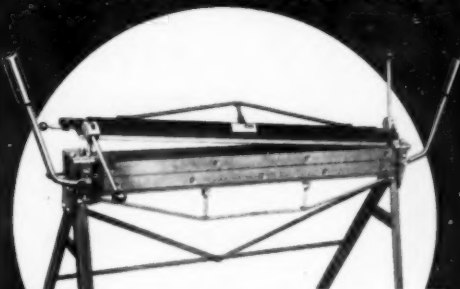
Throat Depth — 6"  
Throat Height — 7"  
Floor Space — 29" x 22"

Send for Catalog

**WHITNEY METAL TOOL COMPANY**  
91 FORBES STREET, ROCKFORD, ILLINOIS



## WEBCO SHEET METAL BENDING BRAKES



### HAND OPERATED WITH SLIP END

This 4 foot portable WEBCO  
Sheet Metal Bending Brake  
is a money-making time  
saver that is indispensable  
in any shop.

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**Midco Register Corp.**  
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Registers — Grilles — Floor Faces —  
Floor Registers — Gravity Registers.  
The complete quality line for all win-  
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**Reinhard**  
**GAS CONVERSION**  
**BURNERS FAMOUS!**

1. NEVER A HEAD REPLACED . . .
  2. NEVER A BAFFLE PLATE REPLACED . . .
- ... Due to Burning Out.



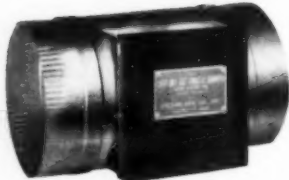
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The "Air Lock" principle is an exclusive feature found only in Reinhard Burners. The extreme efficiency, simplicity of installation and long life are backed by the strong Reinhard Guarantee. No fans, blowers or ceramics are used. The Reinhard line includes domestic, industrial and commercial gas conversion burners. Write for FREE folder.

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SAVES  
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ADDS  
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QUICKLY PAYS FOR ITSELF  
STOPS WARM AIR GOING UP CHIMNEY  
PREVENTS DRAFTS CAUSED THEREBY  
SOOT CAN NOT ESCAPE

A POTENTIAL REPLACEMENT MARKET OF 15,000,000. DEALERS! GET YOUR SHARE OF THIS NEW BUSINESS. IF YOUR JOBBER DOES NOT STOCK SEND US HIS NAME, IN THE MEANTIME WE WILL SUPPLY YOU. IT IS THE HOTTEST ITEM IN THE HEATING BUSINESS TODAY.

**LIFETIME** MANUFACTURING CO.  
PEMBERVILLE, OHIO

## appointments . . .

ANDREW GAGARIN as president of the Torrington Mfg. Co., manufacturer of fan blades and blower wheels. Currently vice president of the company, he joined the organization in 1946, as a member of the production control department, after having been associated with the Morgan Stanley Co., New York investment bankers.



Andrew Gagarin



J. Howard Smart

J. HOWARD SMART as president of Tuttle & Bailey Inc., heating equipment manufacturer. He has been associated with the company since 1923 and has served in the capacity of sales manager, second vice president, secretary, and, in 1951, executive vice president. He is a member of A. S. H. V. E.



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ELBOWS  
HAVE  
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CONDUCTOR PIPE ELBOWS  
AND SHOES

- All Sizes • All Angles
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JOBBER**



**The CINCINNATI  
ELBOW CO.**

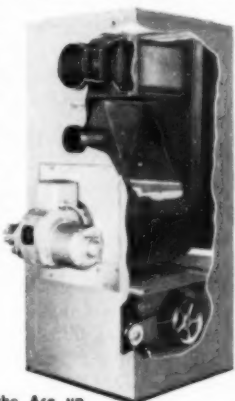
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A Furnace for every installation, Hi-Boy, Lo-Boy, Counter flow. Models in 80,000 and 100,000 BTU output at bonnet.

Really good looking — Gold enamel jacket with red and chrome trim. Tops in efficiency — Quiet operation — All welded extra heavy construction — Combustion chamber refractory easy to install.



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No. 48 Punch



Capacity —  $\frac{1}{4}$ " hole through 16 gauge metal  
Length —  $8\frac{1}{2}$ " Depth of throat — 2"  
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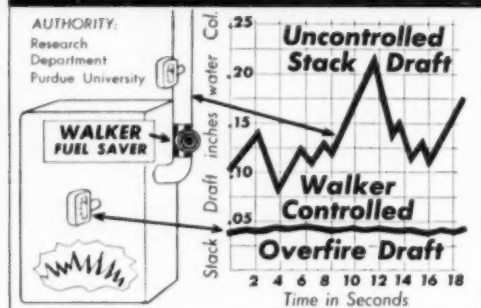
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for discharge  
under pressure

The outstanding performance of **TRADE-WIND** Clipper Ventilators is due to their exclusive design, incorporating the use of genuine centrifugal blowers. Unlike blade-type fans, **TRADE-WIND** blowers move a large volume of air through a duct under pressure.

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The ONLY ventilator  
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PRICE OFFERS AN  
INDUCEMENT BUT QUALITY  
OFFERS A REASON



5717 So. Main St., Los Angeles 37, Calif.

## appointments . . .

STANLEY SKAFTE as director of sales for the heating division of Utility Appliance Corp., Los Angeles. Until recently, he was field engineer.



R. Wendell Franks



Virgil E. Dunning

R. WENDELL FRANKS as representative for Windmaster Corp. He is chief engineer, and his territory will be Indiana, northern Illinois and Wisconsin. William J. Debler, Sr., will represent the firm in the New England area; George D. Kingsland covers the southern Illinois, Missouri and Kansas regions. Virgil E. Dunning covers Minnesota, Iowa and the Dakotas. O. W. Dobson handles New York City and New Jersey, with his associates, George S. Springsteen and Gus Triolo. Daniel Freedman has covered the eastern portion of Pennsylvania.

### Statement of Ownership and Management of

#### AMERICAN ARTISAN

for October 1, 1952

The following is a statement of ownership, management, etc., as required by the act of Congress of August 24, 1912, as amended by the acts of March 3, 1933 and July 2, 1940 (Title 39, United States Code, Section 235) of American Artisan, published monthly at Chicago, Ill., for October 1, 1952.

1. The names and addresses of the publisher, editor, managing editor, and business manager are:

Publisher, F. P. Keeney, Chicago, Illinois.

Editor, Clyde M. Barnes, Chicago, Illinois.

Managing Editor, Clyde M. Barnes, Chicago, Illinois.

Business Manager, Chas. E. Price, Chicago, Illinois.

2. The owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding 1 per cent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a partnership or other unincorporated firm, its name and address, as well as that of each individual member, must be given.)

Keeney Publishing Company, 6 North Michigan Avenue, Chicago 2, Illinois. Stockholders: F. P. Keeney, Chicago, Illinois; W. J. Osborn, Eastfield, Conn.; Chas. E. Price, Chicago, Illinois; Robert A. Jack, Cleveland Heights, Ohio.

3. The known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: None.

4. Paragraphs 2 and 3 include, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, also the statements in the two paragraphs show the affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner.

Chas. E. Price, Business Manager.

Sworn to and subscribed before me this 15th day of September, 1952.

Grace E. Waymire.

[My commission expires February 10, 1954]

(SEAL)

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**WELD IT!**

**SOLDER IT!**

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**DRAW IT!**

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IT!**



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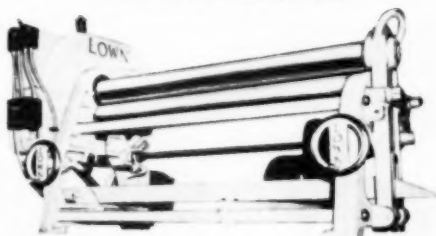
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A new improved, modern design, heavy duty machine engineered for durability, strength and service.

- Initial Pinch Type-Power Driven
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Write for Bulletin

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SAN ANGELO, TEXAS

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**Am-Pē-Co** SINCE 1929

"Unipack"

*Furnace Blower*

"DOC" (WITH THOUSANDS OF SATISFIED CUSTOMERS) SAYS:

*Quiet as a CAT'S PURR*



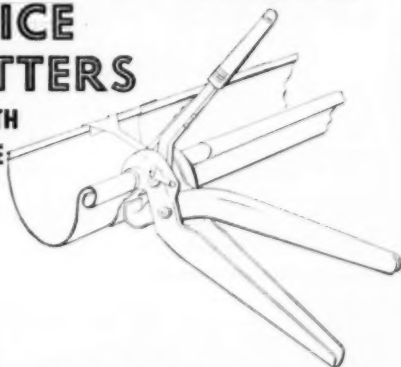
FIRST furnace blower made commercially in the Middle West. . . TWENTY years of service in thousands of homes . . . continuing demand is PROOF of PREFERENCE for QUIETER operation.

It's the operation that counts in a blower. Rugged operation that's "Quiet as a Cat's Purr" and long life are assured when you install the UNIPACK.

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MARSHALLTOWN, IOWA

## Do it the **MELAWAY** SPLICE GUTTERS

IN 1/10TH  
THE TIME



with **MELAWAY Couplings**

- SAVES TIME • STRONGER JOINTS •
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- ONLY ONE TOOL NEEDED • SIMPLE AND EASY TO USE • SHORT ENDS USED—NOT WASTED

**MELAWAY CORPORATION**

BRANDON, WISCONSIN

Telephone 1361



## appointments . . .

Maryland and Delaware for leading manufacturers of heating equipment since 1941. He represents Windmaster there. Harry M. Hadley will handle the West Virginia and western Pennsylvania area and Perry Guest of the P. L. Guest Sales Co., Greensboro, N. C., will be the representative in Virginia and the Carolinas. The Great Lakes Sales Co. in Cleveland will cover northern Ohio and some of Michigan.



William O. Springer



William K. Underhill

WILLIAM O. SPRINGER as manager of the New York plant of Joseph T. Ryerson & Co., Inc., steel distributor. He formerly managed the Cleveland plant. James M. Mead, whom Mr. Springer replaces, is moving to the executive offices at Chicago for special administrative duties. John W. Queen, formerly alloy steel division manager, has

succeeded Mr. Springer at Cleveland. In addition, William K. Underhill is assistant plant manager at New York. He started with the firm in 1922, and for the past eight years has held the post of sales manager.

WALTER LAMBERT and Richard A. Matheis as sales representatives at Pittsburgh for the Trane Co., manufacturer of heating and air conditioning equipment. Mr. Lambert received a degree in mechanical engineering from Virginia Polytechnic Institute and Mr. Matheis was formerly associated with the general sales department in Trane's main office. Stan Mangham has been appointed to the company's Atlanta sales office.

RICHARD K. HUNGERFORD as district manager of the Baltimore office of Wheelco Instruments Div., Barber-Colman Co. Gordon Hubbert, formerly in the Chicago office, is now district manager in Detroit. Howard P. Berger transferred from Baltimore to Cleveland, and Harold F. Dahlke, from Chicago to the New York office.

### A. A. Feinberg

ALBERT ALLEN FEINBERG, president, U. S. Air Conditioning Corp., died on October 7, at the age of 59. A native of Minneapolis, he was one of the founders of the firm in 1924. Survivors include his wife, son, daughter, brother, and three sisters.

## SOLDER... in all grades

BAR SOLDER — WIRE SOLDER  
METER BAR SOLDER  
ROSIN CORE AND ACID CORE SOLDER  
also

INGOT LEAD AND PIG LEAD  
Jobber inquiries invited

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...one piece  
BLOW PIPE ELBOW  
SAVES YOU MONEY

- HOODS
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- FLOOR SWEEPS
- BLAST GATES
- STAMPED AND ROLLED ANGLE RINGS

Cheaper and stronger than the ordinary piece elbow KIRK & BLUM'S One-Piece Elbows are rolled into a tube, then crimped on an exclusive machine to form a super tight, rigid elbow. These and other blow pipe parts, made in production quantities, are superior, cost less than the ordinary kind. Made in tight to heavy gauges, from 3-inch to 14-inch diameter. Write for literature and prices.



Ball Joints  
Any Size

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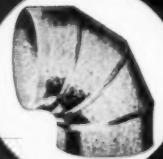
**The Quality Ventilator**  
for all  
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**Swartwout-Dexter Heat Valve**  
solves many roof ventilating problems

THE  
Original  
RIDGE  
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The Swartwout Co., 18511 Euclid Ave., Cleveland 12, Ohio

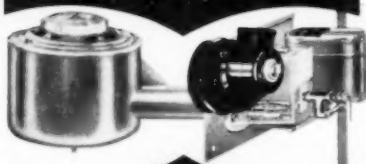
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AND FITTINGS,**  
Prefabricated Ducts,  
also conductor pipe, eaves



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## BURNERS designed to match specific units



Quiet-Efficient-Low-cost unit for small home heating. Miller Flange-mounted vaporizing oil burner and controls.

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Heating Products Division

SINCE 1844

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**Stops Oil Leaks in Oil Storage Tanks, Pipes or Containers**

**Stops Oil Leaks!**



OYLITE-STIK is a new positive oil seal that saves costly repairs to leaky storage tanks, pipes or containers. Easy to use . . . leaks can be stopped instantly . . . just rub OYLITE-STIK over the leaky area.

The material does not become brittle . . . withstands normal vibration.

Use OYLITE-STIK for positive sealing of oil leaks. Send for further information and prices.

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- ☐ Personnel
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- ☐ Lines, etc.

Whatever your needs in any of the above classification . . . you can solve them quickly with a classified advertisement. The space rates are reasonable and results are quick. Closing date—the twentieth of the month preceding issue.

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*Glycolator* the low cost, automatic appliance for control of air-borne viruses and bacteria—added to your heating job proposal, makes your installation worth a lot more!

It's easy to interest your prospects in germ control and deodorizing. Easy to install on furnace or stack. Commercial, large capacity sizes also available. For complete information, prices and dealer franchise information, write

*Glycolator*

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DEPT. B-1



## SALES ARE ZOOMING!

BABY-SAFE

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RECESSED WALL HEATERS

MORE SALES MEAN

**MORE  
DEALER  
PROFIT**

8 SIZES—11,500 to 60,000 BTU—Most complete line available—Get the facts and you will handle CIRCULAIRE too.

WRITE OR CALL

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Owned and Operated by

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## SOMETHING NEW *Quaker City* WROUGHT SQUARE SICKLE HOOK



For Erection Of Square Corrugated Conductor.

**ATTRACTIVE DESIGN  
STRONG**

This is a new addition to our well known line  
OF HOOKS AND HANGERS.

Made in both Wood and  
Brick Drives For 3" Pipe.

SOLD THRU LEADING JOBBERS EVERYWHERE  
**BERGER BROS. CO.**

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How you can speed up your Work  
—without an 8' or 10' Square Shear  
**ALMAR EASY SLITTER**  
FOR USE WITH BRAKE OR BENCH

The Rotary action of cutters  
produces a neat, accurate  
clean edge.



PRICE—COMPLETE  
**Almar Easy Slitter**  
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8' Brake Type — \$75.00  
8' Bench Type — \$85.00  
10' Brake Type — \$85.00  
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REPAIR PARTS for all FURNACES  
BOILERS, STOVES • *Guaranteed to FIT*

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**Copper - Brass - Bronze  
Perforated  
TO YOUR REQUIREMENTS**

**PERFORATED METALS**

FOR ALL INDUSTRIAL USES  
ARCHITECTURAL GRILLES  
SEND FOR CATALOG #35

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### STAMPINGS & SPINNINGS

Zinc Ornaments Available From Stock. Copper, brass, bronze, aluminum and stainless steel ornaments made up promptly.

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## BARBER BURNERS



Barber 324-B round  
Conversion Burner  
with improved controls,  
encased in  
streamlined hood.  
Tested and certified  
by AQA Laboratory.

Gas Conversion Burners in  
sizes to fit all types of round  
or oblong furnaces and boilers.  
Catalog and prices on  
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THE BARBER GAS BURNER CO., 3708 Superior Ave., Cleveland 14, O.

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STOCK DELIVERY ON PEXTO, CHICAGO  
BRAKES, DIACRO, ROUSSELLE PRESSES, KIDDER,  
WHITNEY, ROTEX PUNCHES, REX WELDERS

WE CARRY A COMPLETE STOCK OF NEW &  
USED HAND & POWER MACHINERY.

WE STOCK PUNCHES & DIES & ADAPTERS FOR  
ALL PRESSES & BRAKE DIES, SHEAR BLADES &  
SPOT WELDER-TIPS & HAND TOOLS.

**MILTON EQUIPMENT COMPANY**

N.E. COR. 4th & Race St.

Phila. 6, Pa.

WALnut 2-1734

### J. C. Johnson

JESSE C. JOHNSON, president, S. T. Johnson Co., Oakland, died on October 18 as a result of injuries incurred in an accidental fall at his country home. He was 72 years old. Mr. Johnson had devoted his career to the building and engineering of oil burners. He and his brother founded the company in 1903. He helped form the earliest industry associations, and in 1928 served as president of the American Oil Burner Association.

### Karl E. Saboe

KARL E. SABOE, retail branch manager at St. Louis for Iron Fireman Mfg. Co., Cleveland, passed away August 29th at St. Louis. He had been connected with the firm almost since its inception, and opened the St. Louis branch in 1926. He also served as industrial sales manager at headquarters in Cleveland. He was one of the pioneers in the automatic heating field. He is survived by his wife, son, and daughter.

### George H. Tuck

GEORGE H. TUCK of Garrett, Ind., who had been Indiana sales representative for the J. V. Patten Co., for the past several years, passed away on September 10th. He had been active in the warm air heating industry for a great many years, having previously been associated with other manufacturers.



## ADAMS Flue Thimble (Cast Iron)

Sizes 4 to 12 inches  
Buy Adams Known Quality

### THE ADAMS COMPANY

Bridge Street • Established 1883 • Dubuque, Iowa

## Elgo Ventilating Specialties

### A TIGHTER FITTING AUTOMATIC SHUTTER

Because every louver is weather-stripped, the Elgo Automatic Shutter is always tightly closed against rain, snow, and insect pests when not in use. And because the louvers are made of aluminum, they open the instant the fan or blower starts. Sizes from 12" to 72" — also rectangular.

Write for circular and prices.



"ELGO" TYPE  
AUTOMATIC SHUTTER  
Front View (Open)

ELGO SHUTTER & MANUFACTURING CO.

2738 W. Warren

Detroit 8, Mich.

Free  
CATALOG

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## USE VECTAIRE Baseboard Registers

For FORCED AIR or  
PERIMETER HEATING



Be first in your area  
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New VECTAIRE

Designed for 4" and 5" duct systems. One 8 ft. length handles up to 10,000 BTU's. Perfect for new homes. Just open the package — slip in and mount with snap lock assembly. Magic Shutter controls air diffusion. No wall streaks. Comes in 8 ft. lengths, by 4" x 4" high.

Write for details and Installation Manual  
**VECTAIRE MANUFACTURING CO.**

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SAMPLES FREE

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**FLUXES**  
SODERING  
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**Research Laboratory Assistant** with experience in testing and development of Heating Appliances. Knowledge of A.C.A. Approval Requirements desirable. Excellent opportunity for advancement in the Research and Development Department being relocated.

Rheem Mfg. Co.  
7600 So Kedzie Ave.  
Chicago 29, Ill.

**WANTED** — **SALES ENGINEER** thoroughly experienced in Air Conditioning and Heating. Permanent position with excellent sales potential in a rapidly expanding city. Guaranteed salary plus commission. Air Conditioning possibilities are exceptional. Dry beautiful climate. Write complete details of experience and salary required to Maslow Sheet Metal Works, 202 So. Tucson Blvd., Tucson, Arizona.

**Sales Representative Wanted** — Michigan, Minnesota, Missouri, Ohio and some other good exclusive territories available. Must be capable of selling our service to heating, air condition-

ing, and refrigeration trades. Also to national users of heating and refrigeration equipment. Long established midwestern firm. Repeat orders, commission basis. Very profitable for man able to handle this since it is a service to the trade very much in demand today. Address Key 881, American Artisan, 6 No. Michigan Avenue, Chicago 2, Ill.

**AVAILABLE** — Warehousing facilities and representation in Philadelphia 60 Mile surrounding area.

Alan Heating Corp.  
Wholesale Distributors  
1410 N. Delaware Ave.  
Philadelphia 25, Pa.

### situations wanted

Wanted sales engineer to work out of midwestern headquarters of large nationally known concern contacting oil burner manufacturers through district representatives. Knowledge and experience in domestic heating control business desirable. age 28 to 35, unlimited opportunities for further growth. Excellent employee security program. Send resume stating qualifications and experience. Salary commensurate with ability. Address Key 914, American Artisan, 6 No. Michigan Ave., Chicago 2, Ill.

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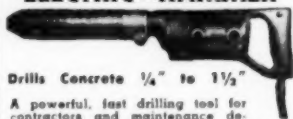
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901-903 East 9th Street, Los Angeles 21, Calif.  
Trinity 4715

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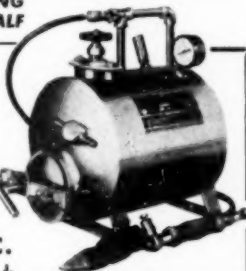
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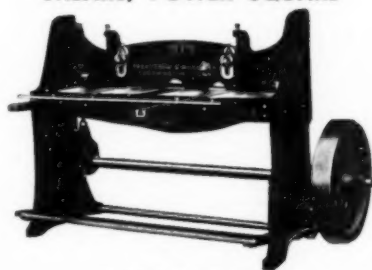
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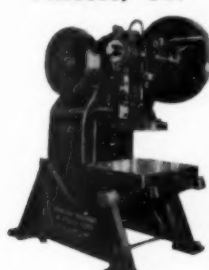
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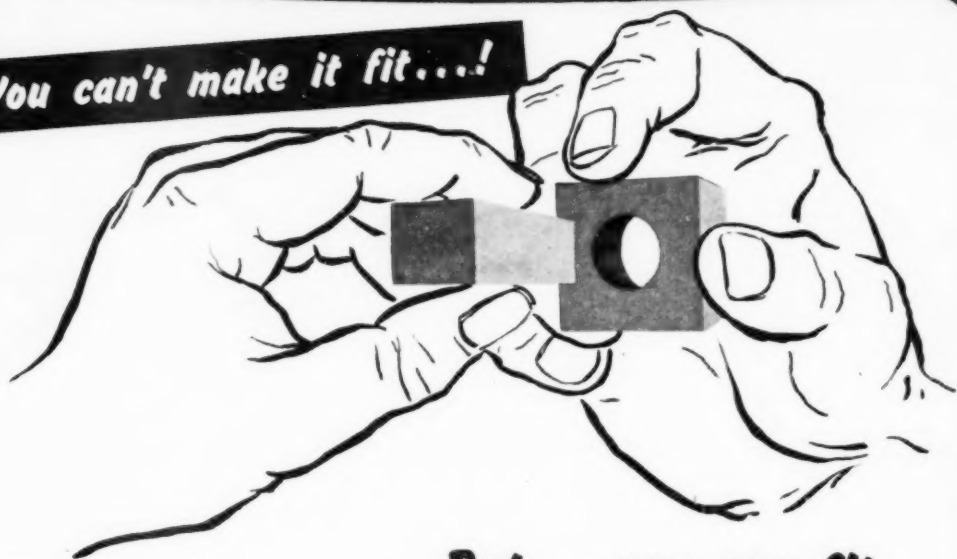


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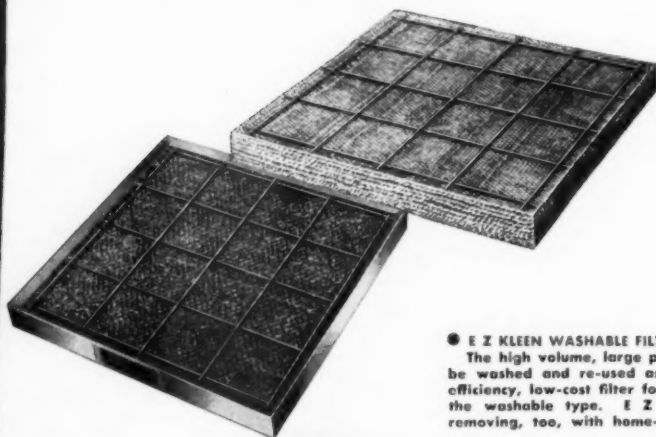


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